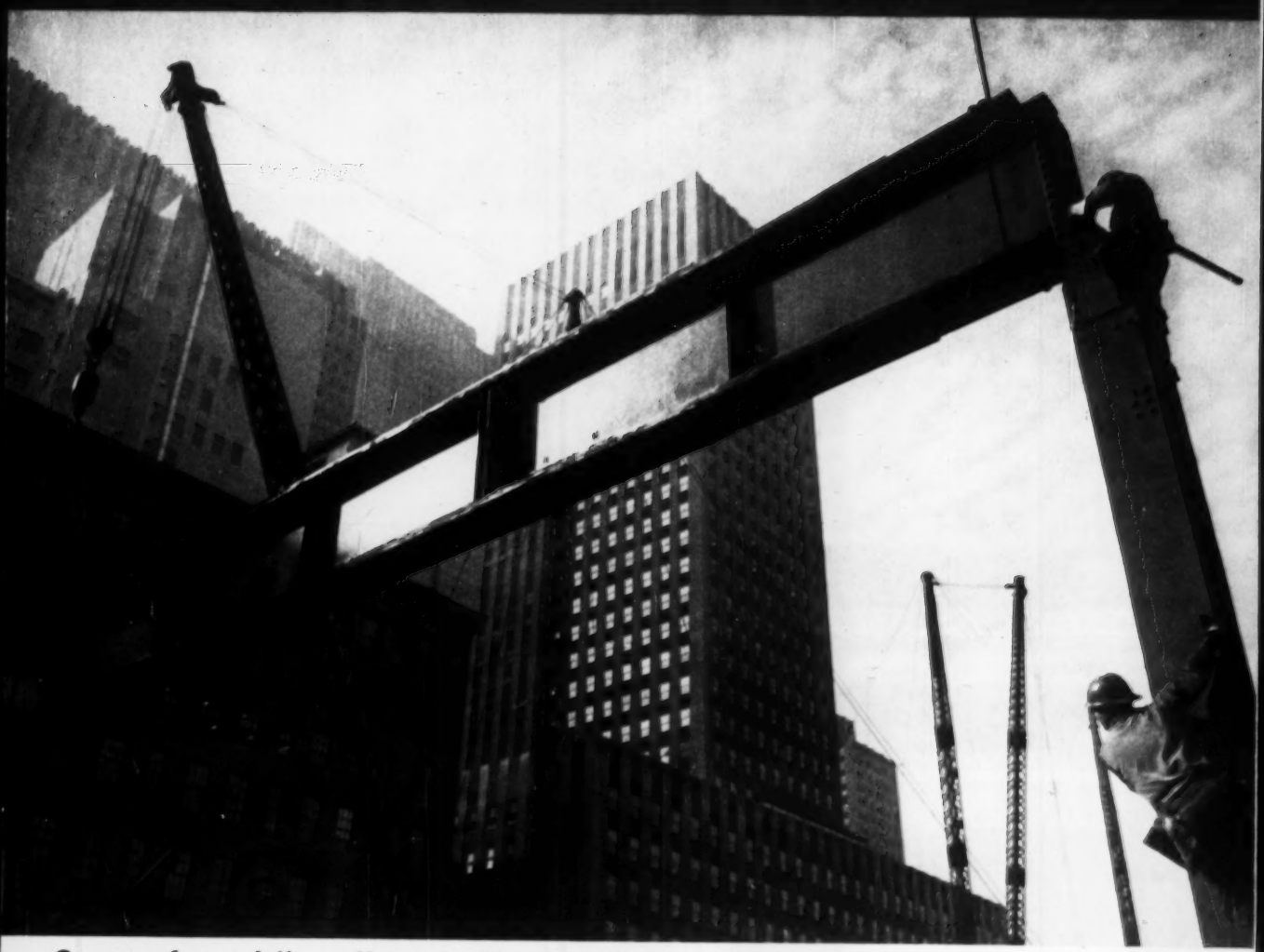
ENGINEERING NEWS-RECORD

- [illegible] drydock to hatch a satellite
- Asphaltic membrane leakproofs a lake [illegible]



Start of world's tallest bolted building p. 28

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The street was Too Low for the sewer

Maintaining the grade line meant limited headroom for this new storm sewer in Winchester, Virginia. A full-round pipe with the necessary waterway area would have extended above the street. The solution: Armco Pipe-Arch with low, wide-bottomed design to meet both headroom and waterway area requirements.

Armco SEWER Structures

Armco Pipe-Arch is an arch structure with a slightly curved integral bottom. It provides the advantages of corrugated metal design and strong, tight joints that are so important in sewers and other drainage installations. For severe corrosive service, such as industrial sewers, you can specify Armco ASBESTOS-BONDED Pipe-Arch. Where erosive flow is a problem, you can get the extra protection of Armco PAVED-INVERT Pipe-Arch.

There is a size and type of Armco Pipe to meet every sewer requirement. You get the strength, waterway area, durability and flow capacity you need for each job. Write us for complete data. Armco Drainage & Metal Products, Inc., 4636 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

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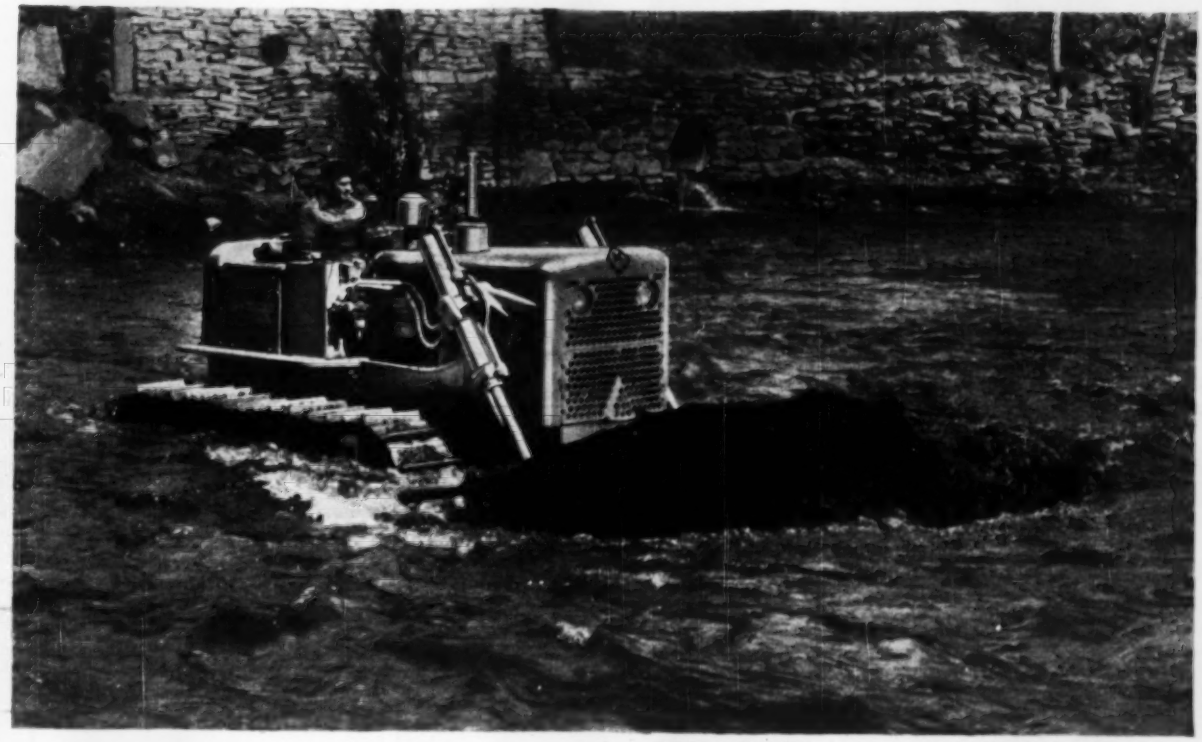

HD-11B 94 belt hp • 24,800 lb (approx.) as shown

Restoring river bed after heavy flood requires track-deep operation in water and silt

Positive Seals **in Allis-Chalmers HD-11B tractor effectively keep out damaging dirt and water**

Considerable work was required in Scranton, Pa., recently to restore the Lackawanna River bed and banks after a disastrous flood had caused waters to rise 15 to 20 feet above normal. Channels had to be cleared, creeks widened, dikes built on river banks and, in some places, the river even had to be changed back to its original course.

Restoration work was carried on by Sweeney Brothers, Scranton contractors, under the direction of the Pennsylvania Department of Forests and Waters. Key machine on one phase of the project, an Allis-Chalmers HD-11 tractor-bulldozer, often worked track-deep in water and silt while clearing channels of mud and wreckage. The dozer also maintained roads for the fleet of seven trucks hauling material from the river.

The HD-11B proved to be an ideal machine for this job, according to Thomas J. Collins, Sweeney Brothers president. "This is our first piece of Allis-Chalmers equipment and I'm happy with it. The unit has been subjected to very tough conditions and has stood up well. Considerable saving has been made because Allis-Chalmers 1,000-hour lubrication seals keep dirt and water out of truck wheels, rollers and idlers."

The spring-loaded *Positive Seals* that permit 1,000-hour lubrication on truck wheels, idlers and support rollers are only one of the many outstanding features of Allis-Chalmers tractors.

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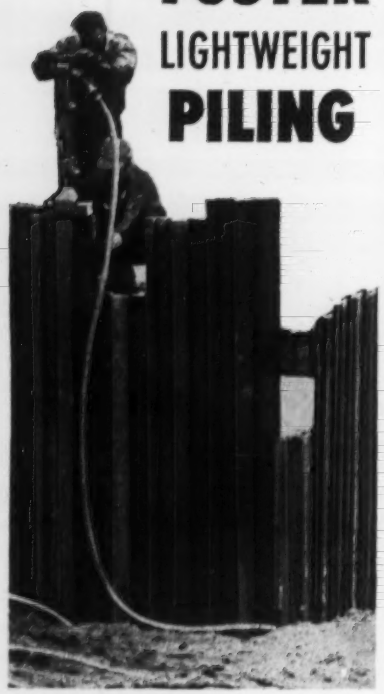

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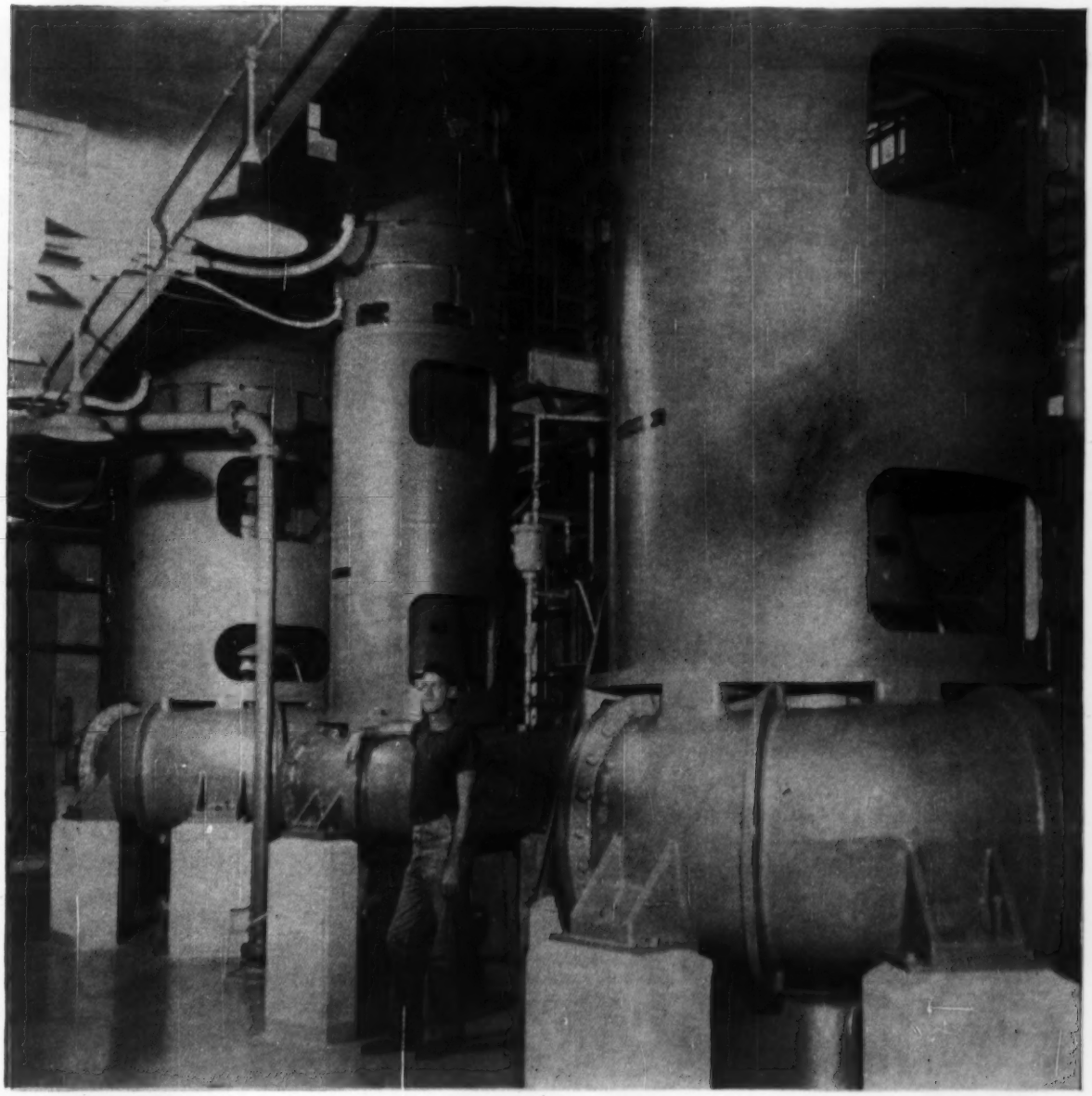

24", 30", and 36" Fairbanks-Morse "Angleflow" pumps in Tampa's Krause St. station. Consulting Engineer—Greeley and Hansen, Chicago.

Master Plan for Tampa

To eliminate a serious bay pollution problem, Tampa has expanded its sewage treatment and disposal facilities by doubling the area served and connecting a 78% increase in population. The $22 million investment includes a 36 m.g.d. treatment plant, six new pumping stations with 27 new Fairbanks-Morse sewage pumps. There are pumps in the Fairbanks-Morse line to move any magnitude of municipal water supply at any appropriate pressure, and other pumps to meet ordinary or unusual problems of wastes treatment and disposal. A Fairbanks-Morse hydraulics engineer will be happy to work with your consulting engineer in specifying the right pump for your specific job. Fairbanks, Morse & Co., Dept. ENR-11-22, 600 So. Michigan Ave., Chicago 5, Ill.

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Tecon's paving operation on the Kansas Turnpike . . . *(right)* because of an efficient batch plant and dependable Macks, like those shown, the minimum number of haulers were used.

Batch trucks speed Kansas Turnpike paving

. . . as much as 3,000 linear feet of 10-inch, 24-foot pavement in a 10-hour day . . . averaging 2,600 linear feet per day—that's quite a record for two twinbatch pavers working tandem with wire fabric laid on the 7-inch pour of the first paver. To a large extent this efficient paving was due to the trucks hauling the dry batches to the pavers—Mack trucks, each carrying four batches in their compartmented dump bodies.

Mr. S. N. Foster, project manager for The Tecon Paving Company of Dallas, Texas, is all for dependable Mack haulers—and for good reason! Tecon's 12 Mack B-42S dumpers can be depended upon for top performance 10 hours a day, week after week . . . assuring an uninterrupted flow of dry mix to the pavers.

Why not discover for yourself, like Tecon, that when you use Macks, you can do more with fewer trucks . . . more efficiently . . . and at less cost. Get the facts from your Mack Dealer or Representative. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd. 4429

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B.F.Goodrich

How all-nylon Super Traction tires pull contractor through the big, tough jobs

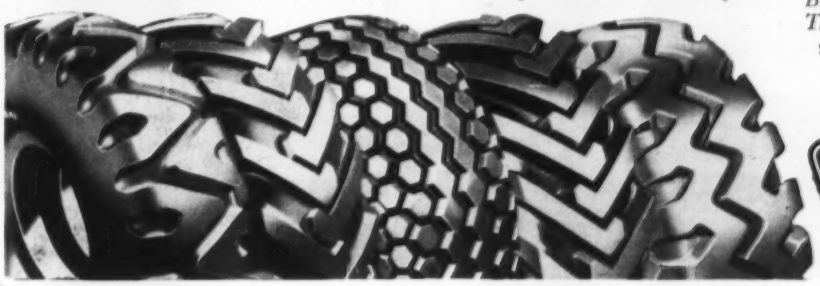
SUGDEN & SIVIER, INC., operate 150 vehicles, including dump and transit mix trucks, semi-trailers, scrapers and graders, out of Oak Park, Michigan. The unit above is at work on a slag grading job at the Detroit Sewage Treatment Plant where both traction and flotation are all-important.

That's why this contractor chooses B. F. Goodrich *all-nylon* Super Traction tires. They pull through the big, tough assignments and do an "all-around job", the company reports. Thick Super Traction cleats take a deep bite, give positive traction. The wide tread makes a big footprint to give greater flotation in soft going. And under the tread is the B. F. Goodrich *all-nylon* cord body.

Nylon withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. That's why the B. F. Goodrich *all-nylon* cord body outwears even the extra-thick Super Traction tread, *can still be recapped over and over!*

Your B. F. Goodrich retailer has the big, tough tires for your off-the-road work. Let him show you the ones that will save you money. Or write *B. F. Goodrich Tire Co., A Division of The B. F. Goodrich Co., Akron 18, Ohio.*

There's a B. F. Goodrich tire for every construction job



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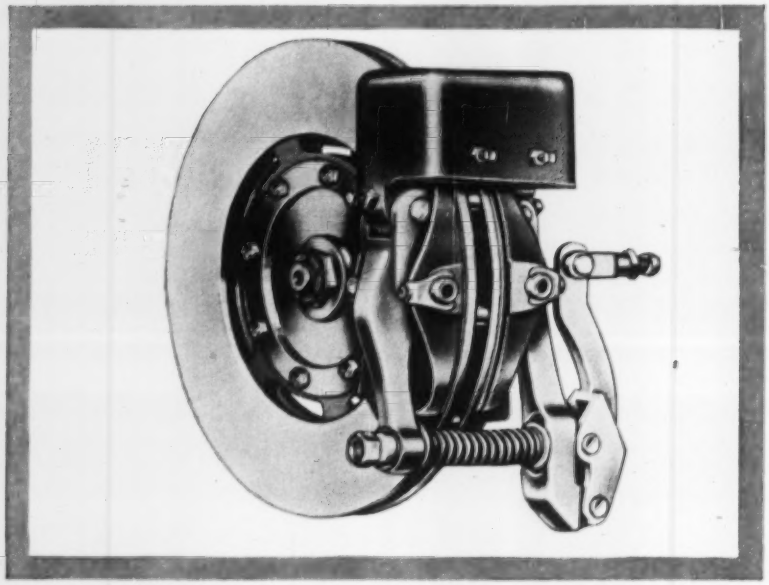

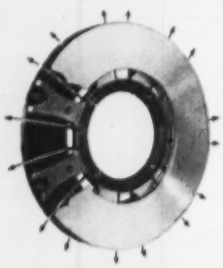

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Reader Comment

Bigger Floating Docks

SIR—I refer to the photograph and article on p. 140 of your issue of Engineering News Record dated Oct. 11 wherein you show a photograph of the "World's Largest Floating Dry Dock." From the information given in the subtitle we think the photograph of this dock appears to be a long way short of the world's largest.

The writer was personally concerned with the construction of two 50,000-ton-capacity floating docks which were built in India during the last war. From memory, the figures relating to these docks were very approximately: total length 1,000 ft, total weight 20,000 tons, total capacity 50,000 tons. Each of these docks was capable of handling the battleship 'Hood' which was of course sunk by enemy action during the last war.

J. D. THOMPSON
Works Manager
Cleveland Bridge & Engineering Co., Ltd.
Darlington, England

Cracks at Inflection Points

SIR—There has been a series of failures in reinforced concrete construction that definitely point to the need for some clearer thinking about the causes and how they can be prevented. It is certain that in most, if not in all, cases, there has been no deviation from current accepted practice and codes.

In all cases, the failures were due to diagonal tension and bond, especially in the case of precast concrete structures. Although no report has been released, the same finger points to the failure in Jackson, Mich., where it is obvious that an ultimate-strength safety factor was absent because of the thoroughness of the collapse.

Too much reliance is placed by many engineers on the literal application of codes, instead of on intuitive and logical thinking. The failure of the precast concrete girder illustrated in one of

(Continued on page 10)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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1 SEWAGE SYSTEM SWITCHGEAR — CONTROL CENTER

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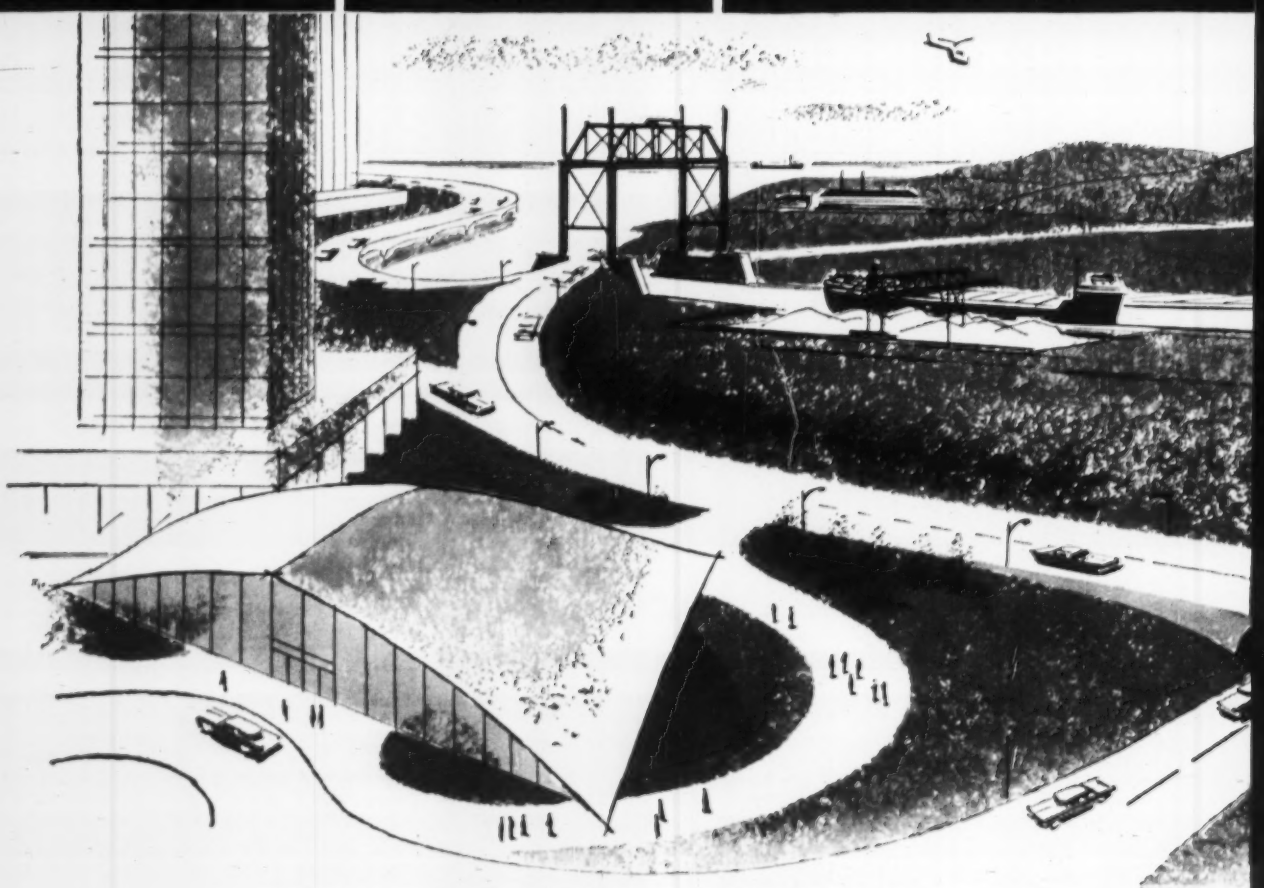
3 WATER WORKS SWITCHGEAR AND CONTROL CENTER



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1. This close-coupled assembly of Westinghouse "drawout" switchgear and control center serves the modern sewage treatment plant at Bloomsburg, Pa. 2. Another control center at Bloomsburg. All units were factory-assembled and pre-wired. 3. Incoming power for the Houston, Texas, water purification plant is received in the 1000-kva, 4160/480-277 volt power center at right. Power control at left has 480-277 volt power section, 150-kva dry-type transformer and a 120/208 volt lighting section. 4. 1000-hp Westinghouse motor driving a compressor for vehicular tunnel air system. 5. Vertical-type circulating pump for flotation beds in a Cincinnati, Ohio, sewage plant driven by Westinghouse Life-Line® motor. 6. Brilliant nonglare lighting in Bank Street Tunnel, Seattle, Washington, using Westinghouse fluorescent fixtures and tubes.

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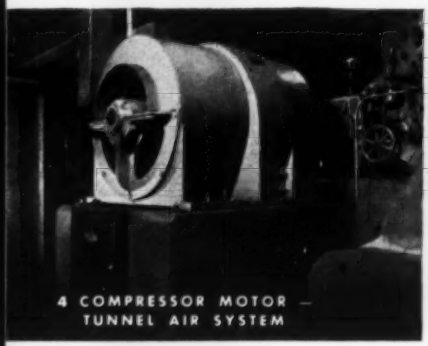
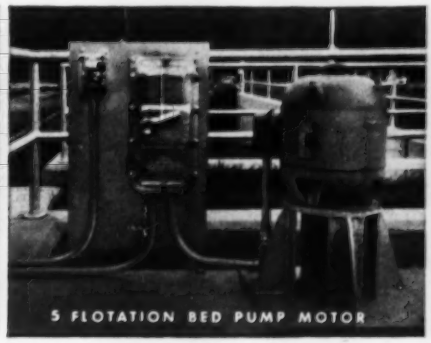
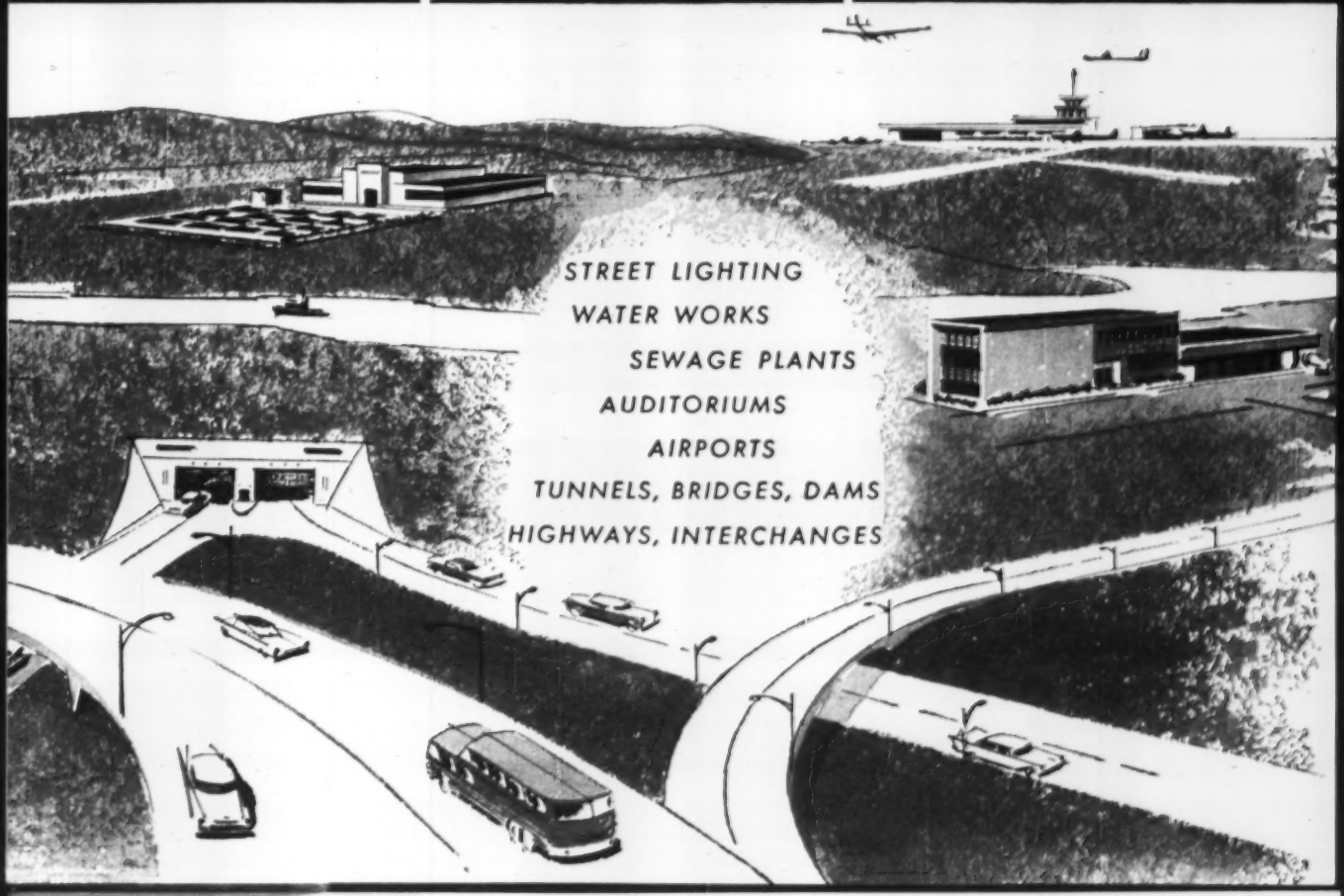


4 COMPRESSOR MOTOR — TUNNEL AIR SYSTEM



5 FLOTATION BED PUMP MOTOR

6 TUNNEL LIGHTING SYSTEM



Yeomans manufactures the most complete line of Application-Designed sewage treatment equipment

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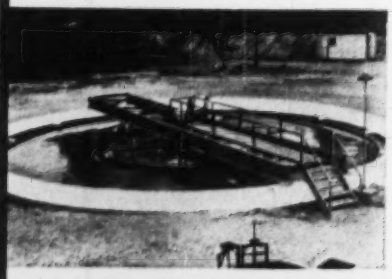

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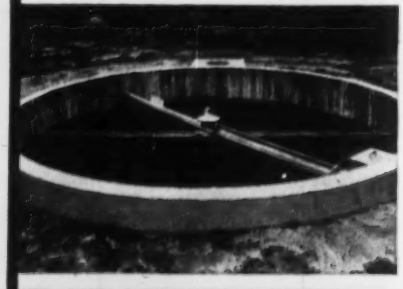
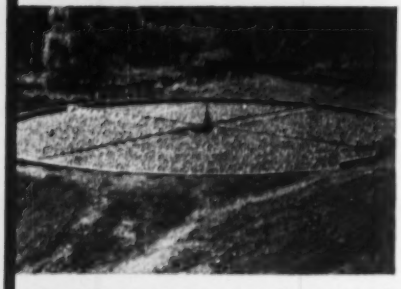


. . **the WATER-WHEEL,** a rotary distributor used with trickling filter systems in the secondary treatment of sewage. An exceptionally rugged, yet simple piece of equipment, the Water-wheel provides uniform distribution over the entire filter bed at all flow rates . . even the lowest. Costly accessories such as underground feed pipe, dosing chamber with siphon, center support, and mercury seal are not required.



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. . . Reader Comment

your recent issues is an unfortunate example of such application. It had its prototype in the failure of an experimental girder tested at the University of Illinois. However, this failure was not greatly emphasized, but made such an indelible impression on my mind, that it has governed my attitude towards diagonal tension more than any other fact.

It seems to me that if a shrinkage crack occurs at or near the inflection point, failure could be prevented only if the crack took the proper angle or the beam had enough shear reinforcing to carry all the shear. With a crack at the inflection point practically a true hinge is developed, and the reinforcing must be adequate to transfer the load in shear. Most effective for this purpose are trussed bars or stirrups spaced very closely and securely anchored to top and bottom reinforcing. At least two bars should be carried throughout the top of the beam and tied with stirrups that are at no place spaced farther apart than the depth of the beam. With trussed bars, continuous top bars could be omitted in some cases.

There has been too much emphasis on the strength of concrete in tension. This strength, in my opinion, is not consistent, especially in regions where diagonal tension is the dominating stress, and where a shrinkage crack may effect a complete separation of component parts.

I have designed and constructed many buildings in reinforced concrete of perhaps the shallowest construction ever used for floors and roofs, without encountering any disturbing deflections or any other disturbances. But in the design for diagonal tension, I have placed very little reliance on the concrete regardless of its cylinder-test strength, unless there was no possibility of a weakness being introduced by shrinkage or of vulnerability due to either carelessness or neglect or misunderstanding.

I would like to comment also about the series of accidents on jobs in construction. It has been my experience that a minority of contractors rely on the judgment of their superintendents for the adequacy of shoring and extent of re-shoring, rather than heed the advice of engineers, let alone employ engineers to either design or check their work.

Most of the troubles can be laid to insufficient bracing, both lateral and diagonal. I have seen 4x4-in. wood shores, 16 ft long, supporting a tributary area of 50 sq ft, braced only in one direction with the lightest possible members. Written protests usually

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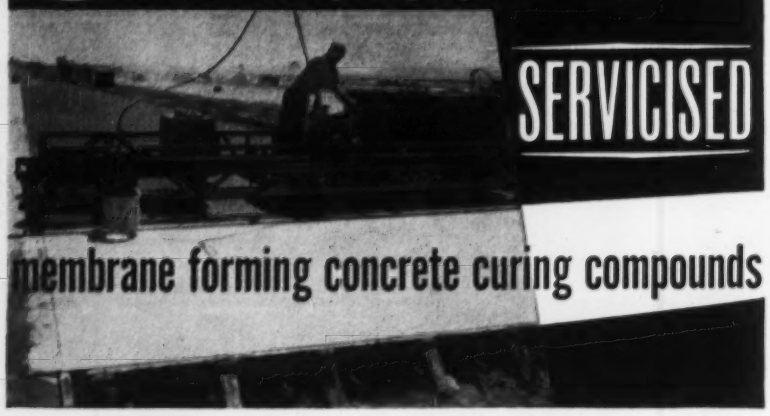

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WAX-RESIN BASE. A general purpose compound, usually used on mass concrete, pavements. Has excellent water retention properties, allowing slow curing of the concrete which eliminates checking. Dries rapidly and forms a film of uniform texture.

RESIN BASE. Recommended for buildings, offices, architectural concrete, etc. The pure resins, oils and other ingredients present a clear film which does not materially alter the appearance of concrete and it permits early application of adhesives, paint, etc.

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. . . Reader Comment

result in only temporary compliance with an improvement in the situation. Only provisions in codes that all shoring must be subject to the engineer's approval can cure situations of this type.

DAVID B. CHESKIN
Consulting Engineer
Chicago, Ill.

Miscalculation?

SIR—The Oct. 25, 1956, issue of the Engineering News Record, there is a very interesting article on soil cement installation on a 13-acre parking lot that cost less then $1.00 per sq. yd.

A little multiplying yields some very amazing figures. The article states 15,000 barrels of Portland Cement was used on this 13-acre parking lot. Thirteen acres contains approximately 63,000 sq yds, thus presumably this contract would not have been over $63,000.00.

Fifteen thousand barrels of cement carload price runs approximately $3.75 per barrel which calculates that the cost of the cement alone delivered, job site, is approximately $56,500.00.

The $64 question is how can this contractor supply $56,500.00 worth of cement for a contract that will gross approximately $63,000.00. I would be very interested in finding out where the decimal was misplaced.

I believe a more realistic figure would be 5,000 barrels of cement on a thirteen acre parking lot instead of 15,000.

CHARLES N. DEBES
Professional Engineer
Rockford, Ill.

[EDITOR'S NOTE: Mr. Debes is correct—for a 13-acre plot, the figures are amazing. However, for a 26-acre lot (which is correct) they're not so bad.]

CALENDAR

Wire Reinforcement Institute, Inc., The Jung Hotel, New Orleans, La., Nov. 26-27.

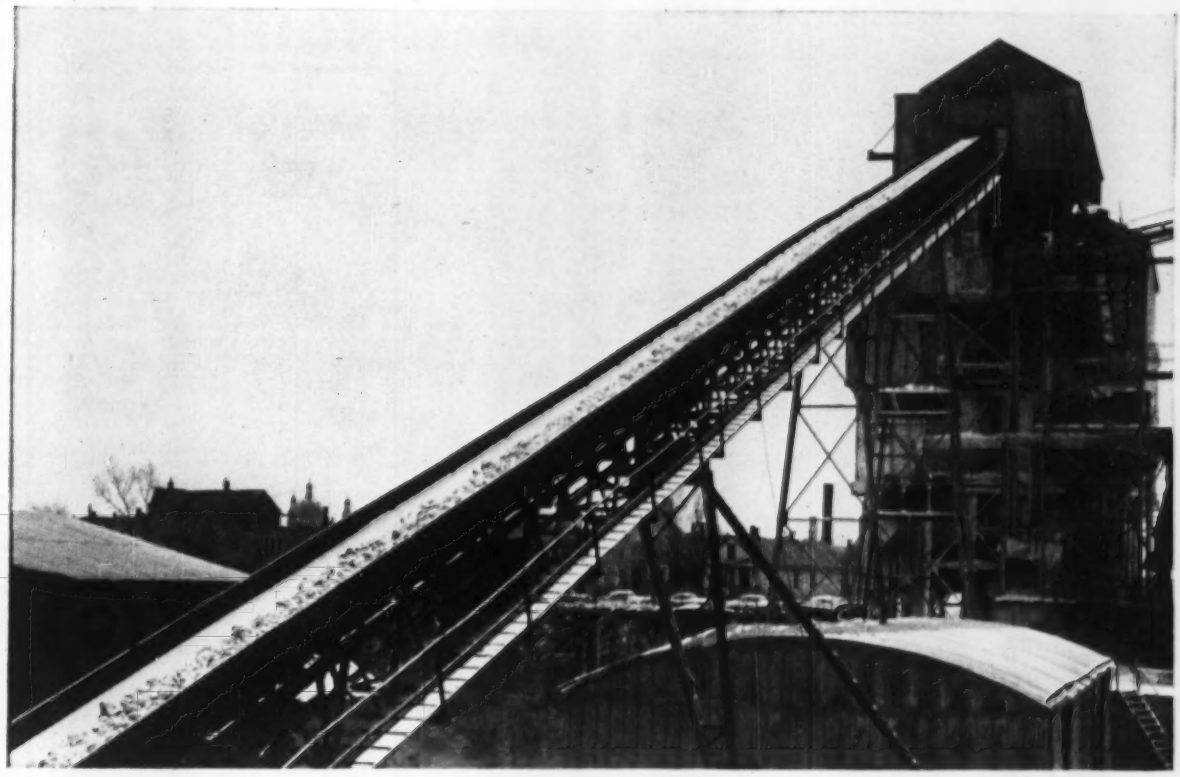
International Road Federation, Regional Conference, Antigua Guatemala, Nov. 26-30.

American Association of Staff Highway Officials, annual meeting, Hotel Traymore, Atlantic City, N. J., Nov. 27-30.

Fourth Illinois Structural Engineering Conference, discussions on steel and concrete specifications, one-story building foundations and high-strength structural steel. University of Illinois, Urbana, Dec. 3-5.

Illinois Institute of Technology, Modern Builders Conference, Prudential Building, Chicago, Ill., Dec. 6-7.

American Road Builders Association, annual meeting and road show, Chicago Amphitheater, Jan. 28-Feb. 2.



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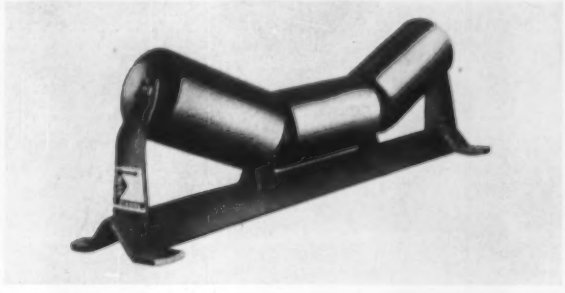

Available in widths from 16" to 60", with 4", 5", or 6" rolls, the Barber-Greene line includes standard troughing carriers and return rolls, flat belt and picking table carriers, self-aligning carriers and return rolls, grain idlers, rubber impact carriers, and self-cleaning return rolls.

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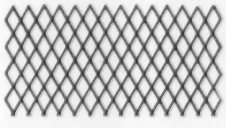

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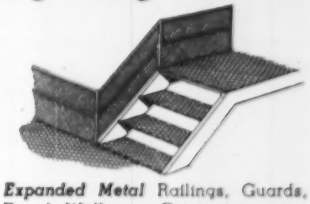

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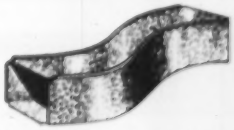

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

MONEY COMING IN—The Treasury Department now estimates that highway tax receipts in the current fiscal year of 1957 will bring in an additional $612 million because of raises approved by Congress in the highway bill. The Treasury adds that total annual receipts from all highway taxes will rise to an estimated $3.182 billion by 1962. But there's a cloud on the scene: rising costs of materials, as reflected by contract prices in the third quarter of 1956. The Bureau of Public Roads said it recorded a rise of 3.8% on top of a 2.3% increase in the second quarter. Government officials looked at the report warily—fearing that a lot of highway work would have to be refigured.

INTERSTATE POLLUTION ENFORCEMENT—Interstate Commission on the Potomac River Basin will consider recommendations—made by governors of two of its member states—to seek authority to issue pollution enforcement orders. Now, like all other interstate sanitary agencies except the Interstate Sanitation Commission in New York Harbor and the Ohio River Valley Water Sanitation Commission, the Potomac Commission has advisory powers only. Meanwhile, ORSANCO recently resolved to go ahead with its first enforcement action—against the City of Gallipolis, Ohio, which has already beaten down a state enforcement action in the courts.

FOR THE MANPOWER SHORTAGE—Last week's Thomas Alva Edison Foundation meeting, on the engineer and scientist shortage, heard a new suggestion on the special problem of talent being wasted. Rear Admiral H. G. Rickover of the Atomic Energy Commission called talented youth "our most precious national asset" and suggested that industry and the educational foundations should set up model academic secondary schools in perhaps 25 different centers in the U.S. Capable teachers with small classes of talented children, Rickover says, could demonstrate what can be done toward making our schools as good as anybody's.

PEACE ON THE STREETS—In an attempt to end rows with abutting property owners, Louisville city officials are discussing new rules for street building assessments. What's being planned by Mayor Andrew Broaddus is the setting of two minimum widths for residential streets—one 26 ft, where the abutting homes have driveways and provide off-street parking, and the other 32 ft, where abutting homes do not provide for off-street parking space. The issue of street widths has been a hot one in Louisville for several months. The city in various instances has ordered streets built 30, 32 or 36 ft wide over loud objections from property owners who felt they should not have to pay for more than 26 ft., which is general width of residential streets at the present.

On Route 4, north of Sleepy Eye, Minn., Berghuis Construction Co.'s Adams 550 grades fill in 3rd gear (4.5 mph).

When traffic over a narrow, hump-backed 17-mi. section of Minnesota State Route 4 — from Fairfax to Sleepy Eye, Minn. — grew too heavy for safety, the State Highway Dept. decided to rebuild it. Berghuis Construction Co., Prinsburg, was awarded the earthmoving contract. The roadway was to be widened, ditched, and regraded to make driving safer, and to permit heavy commercial traffic.

Berghuis split the 465,000-cu. yd. dirtmoving job between two work groups. Three crawler-drawn 19-yd. LeTourneau-Westinghouse BT scrapers worked ahead, cut down high shoulders and cleaned drainage ditches. Then two 23-yd. B Tournapulls and three 16-yd. "C's", push-loaded by 2 crawlers, hauled sandy-clay fill to build new grade. (Current models have 25 and 18-yd. capacities.) Tractor-pulled LeTourneau-Westinghouse 120 and W-2 sheepsfoot rollers compacted the fill. Three motor-graders handled the grading (50% was done by an Adams 550). A rubber-tired Tournatractor and a crawler were assigned miscellaneous dozing, casting, and finishing jobs. Work was completed in the scheduled 120 working days.

Mobility and speed of heavy-duty grader boosts Berghuis fleet production

Berghuis Construction Co., Prinsburg, Minnesota, helps speed dirtmoving, and keep all units of its production "team" working at top capacity with a versatile Adams 550 motor grader. On a 17-mile highway contract—improving Minnesota Route 4—Berghuis used "550's" 8th-gear-speed of 25 mph to move the machine quickly from one job to another... whenever and wherever needed. This Adams grader spread fill behind self-propelled scrapers, leveled the new road surface, formed shoulders, and cut ditches and bankslopes. It kept 600′ to 800′ haul-roads smooth for Tournapull scrapers traveling at 16 mph on 3 minute cycles.

Owner Delwin J. Berghuis, happy with the performance of his "550" . . . says, "I like the speed and maneuverability of the Adams, and feel that it has done a great job for us. On the Route 4 project it helped put us ahead of schedule."

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Model 440...104 hp...24,080 lbs.
Model 330... 80 hp...23,020 lbs.
Model 220... 60 hp...15,500 lbs.
(Weights shown are usual working weights)

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WASHINGTON OBSERVER

The first official estimate of 1957 construction: 5% up from this year. Commerce and Labor Department experts this week say that next year should put total construction spending up to $46.4 billion compared with the latest estimate of $44.125 billion for calendar 1956.

This year's dollar volume is a 2.6% increase over last year. This represents an actual decline in physical volume of new construction put in place, since price increases, i.e. construction costs, have gone up 4 or 5% over the same period.

Similarly, next year's increase is expected to reflect higher costs with physical volume of work remaining about the same as this year.

Housing will drop again next year the experts say. Their figuring puts spending on new dwellings down to $12.7 billion—based on 1-million starts next year.

By contrast, utilities will up their spending by $670 million next year, for a total of $5.75 billion.

Road construction, water resources development, sewer and water works are all to show increases. Total increase: $800 million.

•

Housing has to be helped, says Raymond J. Saulnier, new chairman of the Council of Economic Advisors. He succeeds Arthur Burns and is expected to hold with Burns' general economic views, but Saulnier, who has made housing and construction a specialty, is already saying that housing has to be encouraged so that the industry doesn't suffer more from the money shortage.

Odds now favor an increase in FHA mortgage interest rates—probably to 5% from the present 4½%—as the homebuilders and mortgage bankers have been asking for months.

The Administration can boost the FHA interest rate on its own but it will face a fight in Congress when the lawmakers are called upon to raise VA interest rates from the present GI maximum of 4½%. Without such an increase to go along with a higher FHA rate, VA mortgages just wouldn't find any lenders.

•

The lease-purchase program is in danger of being dumped. Key officials—including those who favored it from the beginning—are having second thoughts about the effectiveness of this method of getting needed federal buildings constructed.

Trouble is that the program has had difficulty getting off the ground. Though it has been under way for two years, so far, General Services Administration has only one building under construction.

Result is that the $700-million backlog of federal buildings is in danger of becoming blocked at the crucial point: Investors just aren't bidding on the lease-purchase kind of deal.

Purpose of the program is to keep federal spending down by drawing on private investment funds. While the buildings ultimately cost the federal government more (because of interest payments over 10 to 25 years), the annual addition to the federal budget was to be small compared to the outlay if the buildings were paid for cash on the line as they are built.

Next test of lease-purchase comes December 20 when six bids will be opened under the just-announced revision of GSA rules: only combination financing-construction bids are accepted. This should show whether the program can be carried forward with a 4% interest rate ceiling under today's conditions.

•

Correction—The item appearing in this column Nov. 8, concerning tests of runway pavements at Kelly Air Force Base erroneously stated that asphalt design and construction were controlled by the Asphalt Institute. Actually, the pavements were built to Corps of Engineer specifications, and Corps personnel supervised the construction. Asphalt Institute personnel were observers.

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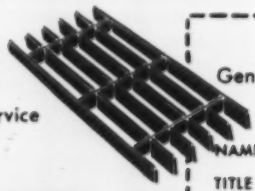

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Partnership in Resources Development:

Before election → **Eisenhower's policy favored no federal dam-building if local interests would undertake the work**

Administration ponders whether Republican setbacks in west mean dissatisfaction with the concept of partnership . . . OR its execution ← ***After election***

A Hard, New Look at Resource Policy

The Eisenhower Administration's controversial partnership policy in natural resources development, and especially in electric power generation, is getting a careful reappraisal in Washington.

This reappraisal is the result of a series of Election Day setbacks suffered by hand-picked Administration candidates throughout the West. Many local campaigns were pitched almost exclusively on the merits of partnership.

One of the Administration's big problems is to decide whether the adverse vote means dissatisfaction with the concept of the partnership policy or with its execution—whether the voters responded to Democratic charges of "give-away," or "underdevelopment." Or the Republicans may decide partnership lacks popular support because they haven't explained the complications of its execution well enough.

As of now, there are no signs that the basic concept of partnership is to be dumped quickly or with any dramatic flourish. Only a week ago in a speech before the National Reclamation Association, Interior Secretary Fred A. Seaton said, "We have several proposals ready for consideration by the next Congress which provide for partnership development of multipurpose structures. We see no reason to inflict the whole burden of financing these projects on the federal government wherever and whenever non-federal interests are willing to assume a share. So long as the public interest is protected, the end results are the same."

I. Partnership Defined

The Eisenhower partnership policy is an umbrella that covers just about the whole spectrum from all-private to all-federal financing of public works aimed particularly, but not exclusively, at multipurpose hydroelectric projects in the West. Basically, the philosophy has been to encourage non-federal financing wherever possible.

Its purpose has been many-fold: to decentralize as much as possible federal dominance of public works developments; to shift as much of the cost as possible away from the federal budget; to have the beneficiaries take the responsibility—financial and otherwise—for the development of public works projects; and to get needed projects built as quickly as possible.

Thus, the partnership umbrella covered the Dixon-Yates proposal to take care of TVA's growing power needs outside the federal budget. It also covers a proposal, that seems likely to prevail, to give TVA authority to issue its own bonds to finance the expansion of power capacity.

Partnership also covered the Administration's proposal to have U. S. Steel Corp.—or private interest—pay part of the cost of deepening the Delaware River to permit ore boats to reach U. S. Steel's Fairless Works near Trenton, N. J. Similarly, the Administration backed the repeal by Congress of its earlier authorization of a federal power project on Coosa River in Alabama. Congress had failed for several years to appropriate any money for construction. Alabama Power Co. now has an application before FPC to develop the site; routine approval is expected.

Partnership took a slightly different meaning as applied to the $34-million Markham Ferry project on the Grand River in Oklahoma. A state body, the Grand River Dam Authority, was licensed for the power development, but the federal government is staying on with a contribution of $6.5 million for flood control.

Authorization and first appropriations for the huge Upper Colorado storage project indicates willingness by the Eisenhower Administration to take on an all-federal development when there is no chance that non-federal interests will help finance the job.

Partnership has come to have a more precise meaning in the development of hydroelectric sites. The partners are the federal government—to finance the non-revenue production end of the projects—and private or local public interest to finance the power producing part of the installation in return for 50-year rights to the power.

This has proven workable and acceptable to Congress (which must authorize the partnership proposal) in some cases but it has failed to win acceptance in others.

II. The Complications

The still smoldering controversy over Hells Canyon illustrates some of the complications of partnership. The low-dam scheme, proposed by Idaho Power Co. before the Federal Power Commission, was not objected to by the Eisenhower Administration in view of its basic philosophy and the fact that Congress through the years had shown no inclination to authorize or vote funds for a high federal dam.

FPC approved the private proposal, finding it in the public interest to proceed immediately with a reasonable proposal as compared with waiting for a possibly preferable but unlikely federal high-dam proposal.

This decision set off anew the opponents' charges of underdevelopment. Examination of the general reasoning

employed by FPC engineers with the help of other expert governmental people may shed some light on this question. Presumably, the federal high dam originally proposed in the Corps of Engineers "308" report on the Columbia River Basin was the most economical plan to achieve all of the multipurpose benefits envisaged. But there are, as river planners know all too well, many basin-wide schemes that will achieve the same benefits at only slightly increased cost over the optimum. Also, in the case of the Northwest, the end of the hydro era draws nearer which continually shrinks the optimum development plan for the basin, in effect giving it more flexibility.

So when FPC approves development proposals that differ from previously heralded "best projects," it attempts first to ascertain that ultimate planned benefits from the basin can be achieved in a scheme incorporating the new project, then it tries to determine that the additional benefits obtained from realizing the new project earlier than the previous best project are worth the additional cost, if any.

Thus, in the view of many river experts, while the Hells Canyon site will not be developed to its maximum (in terms of water storage) under the low-dam plan, this is detrimental only if every possible drop of Snake River water were to be eventually stored at ultimate development. This will in all probability not be the case.

The above, of course, doesn't settle the arguments. More detailed information in the case of the Northwest should be available in October 1957, when the Corps of Engineers is scheduled to complete its revised "308" report on the Columbia Basin. But at least it indicates that the multipurpose development of a basin receives serious consideration under the partnership execution.

III. Status of Key Project

Just which way the Administration—and Congress—will move in the next four years is not clear. One major "test" is coming by February. That's when the Bureau of Reclamation is to report on a proposal by Pacific Gas & Electric Co. to buy falling water and build power generating facilities at the Trinity River project in California. However, election results in California have dimmed PG&E.'s chances.

Congress authorized the $225-million project last session, but held power aspects in abeyance while the Interior Department negotiated with non-federal interests for sale of the water. Preliminary construction on non-power features is under way; a contract for the 450-ft earthfill dam is to be awarded in January.

Political stalemate has thwarted several partnership proposals farther north in the Columbia River Basin. Democrats insist on all-federal construction, in accordance with original basin development plans.

A foremost example of how partnership might work is the John Day project, on the Columbia River between the Dalles and McNary Dams. It was authorized as a federal project in 1949, but Congress has voted no money for it except nominal amounts for planning. Last session, a legislative attempt failed to get it started on a partnership basis —with the Corps of Engineers serving as construction agency and private power companies paying $273 million, for the power features, of a total $310 million, which included a navigation lock, fish ladders and a small amount of flood-control storage.

Now, Public Utility District No. 1 of Klickitat County, Wash., has an application before the Federal Power Commission. Presumably a similar joint-financing plan is contemplated. John Day's significance lies in the consideration of the Corps of Engineers as construction agent for predominantly non-federal interests.

Stalemate in Congress also has held up any action on Green Peter, Cougar and White Bridge projects in the Columbia Basin. Legislation was proposed last session to let non-federal interests develop power at these dam sites, but it got nowhere.

But while no joint federal-local projects were started in the Northwest since 1953, Grant County PUD's Priest Rapids project, previously planned as a federal dam, and, of course, Hells Canyon, were begun under the broader partnership concept. Local public and private utilities also began such power projects as Swift on the Lewis River, Mayfield on the Cowlitz River, Gorge on the Skagit River and Noxon Rapids on Clark Fork. And the federal government continued construction of McNary, Chief Joseph and the Dalles projects. Ice Harbor Dam was the only important federal start, and this was accomplished through the urging of navigation interests.

Because it was not clear just how partnership would work, Pacific Northwest power people were confused for some time. One responsible official said, "It took us two years to learn the ground rules."

But once it was understood that the federal government would allow local agencies to develop previously planned federal sites, the race to build major works was on.

IV. Future Policy

Politically, partnership suffered a heavy blow in the Nov. 6 election. Douglas McKay, former Secretary of Interior and partnership's principal architect, was an election casualty in Oregon, falling before Sen. Wayne Morse, partnership's chief critic. In Washington State, another hand-picked Administration Senatorial candidate, Gov. Arthur Langlie, was badly beaten by public power advocate Sen. Warren C. Magnuson.

Other Republican Senatorial candidates fell in Idaho, Colorado, Nevada and Arizona where power issues, although not as strident as in Washington and Oregon, were viewed as important. Moreover, seven of the ten House seats which Democrats picked up nationally were in the power conscious West—two apiece in Oregon and California, one each in Washington, Nevada and Montana.

Vice President Richard Nixon is understood on good authority to have told Eisenhower that western discontent

Status: Major Joint Local-Federal Proposals

Project (river state)	Cost (millions)	Proposed Arrangement	Congress has . . .
John Day Columbia, Ore.	$310	Private power firms offered to contribute $273 million	Refused to approve
Trinity Trinity, Calif.	$225	Interior Dept. negotiating with private utilities for possible power development	Approved non-power features; construction underway
White Bridge and Green Peter Santiam, Ore.	$58.4	Private utilities want power features at Green Peter and White Bridge	Declined to approve
Cougar Dam McKenzie, Ore.	$34.5	City of Eugene offered $10.5 million for power features	Declined to approve
Coosa River Coosa, Ala.	$121	Way seems clear for private power interests to develop	Acquiesced after balking at federal investment
Markham Ferry Arkansas, Okla.	$34	State Power Authority is paying $27.5 million for construction of power installations	Agreed to spend $6.5 million only, strictly for flood-control features

about power is at the root of the Administration's poor showing across the West on Nov. 6.

There is no inclination, however, to conclude yet that the Eisenhower Administration will do a sharp about-face and go all out on a big program of all-federal power development.

The current reappraisal of partnership is being undertaken with one prime objective: Find a way to get the key projects moving. If a hard look convinces the policy makers that compromise is necessary on some projects, a softening of partnership will show up not in any formal announcements, but by mere governmental acquiescence in all-federal development at certain sites.

What this means, of course, is compromise—the way Washington stalemates generally are worked out.

In summary, recitation of case histories shows that partnership, at best, is loosely defined. This has been, in large part, responsible for widespread misunderstanding of it. Whether the Eisenhower Administration's attempt to turn back the Federal power tide begun in the 1930s will succeed will probably be decided in the coming year.

Are Windows Worth the Cost?

Conference points up the problems arising from extensive use of glass and brings out need for window standardization

At a conference on windows and glass in the exterior of buildings, conducted by the Building Research Institute in Washington, D. C., last week, a strange paradox was presented. Architects spoke enthusiastically about building exteriors almost entirely of glass, but mechanical engineers warned that these transparent areas will have to be covered up—at least on the sunny sides of buildings—if air conditioning costs are not to get out of hand.

BRI planned the conference as a technical forum "to discuss and appraise the newest and most interesting developments in research and design" in windows and glass. The program contained four major phases:

1. Engineering for solutions to problems of daylighting, ventilation, control of heat gain and loss, and air conditioning.

2. Reports on the newest and most interesting developments in the engineering and use of glass products and the major types of windows and accessory devices.

3. Discussions of architectural and mechanical controls to attain environmental standards required by building owners and operators.

4. Architectural analyses of the newest designs with large glass areas for houses, office buildings, stores and shopping centers, and schools.

The papers and the discussion presented at the conference are being published by the BRI.

• **Need for standard windows**—Several speakers called attention to the need for standardization. William Gillett, vice president, Fenestra, Inc., Detroit, presented the window manufacturer's viewpoint:

"Varying the size and layout of windows is one of the architect's easiest tools for creating individualism in building facades, but at the same time it creates a situation in the window market that makes it virtually impossible for window manufacturers to introduce a high degree of automation in their plants. Consequently, the cost of all windows can be considered relatively high in relation to other building materials where mechanization is employed.

"If we, as an industry, are to give our customers improved window products at the same or lower costs than now prevail, we must forthrightly solve the riddle of varying extreme designs, even though window types and sizes are limited in number. In the residential market, there are literally hundreds of different types and sizes of windows, and in the nonresidential field, a large percentage of windows have no standardization whatever."

William Demarest, Assistant Director, Construction Department and Research Institute, National Association of Home Builders, Washington, D. C., summarized NAHB objectives in standardizing residential windows:

"Our purpose is to foster development of a very few stock sizes for windows in homebuilding that will be best coordinated with the other pieces with which they must fit, so as to accomplish two things: (1) Ease and economy of installation, and (2) A reduction in the number of stock residential sizes called for by homebuilders. It is logical to expect that this will reduce manufacturers' costs in producing and stocking windows and—it is hoped—ultimately result in a lower unit delivered price, as well as a lower in-place cost."

Lack of standardization of windows also affects adjoining construction and associated installations. For example, Sterling S. Bushnell, vice president, Breneman-Hartshorn, Inc., Cincinnati, pointed out:

"With the present lack of uniformity, the manufacturer of blinds or shades is confronted with an almost limitless variety of widths and lengths, which means that most shades must be made to measure for the particular job . . . this whole question of standardization in the field of interior controls is one which has been talked about at great length for many years, but very little seems to have been accomplished . . ."

At present, efforts are being concentrated on standardization of residential windows (ENR, July 26, p. 120).

• **Windows vs cooling costs**—Though many architect speakers extolled the virtues of large windows, Alfred L. Jaros, Jr., consulting engineer, Jaros, Baum & Bolles, New York City, was much less enthusiastic. In most buildings, he said the radiant heat from the sun, entering through windows, is one of the largest determinants as to how large and costly the cooling system must be. Even more important, it is the largest factor that is readily amenable to preventative treatment; it is usually much cheaper to keep heat out initially than to remove it after it gets in.

To limit heat gain due to solar radiation, Jaros argued, windows should be either well shaded or their areas should be the smallest acceptable. Even with blinds or shades, every needless square foot of glass, except on the north, will probably add $10 to $15 to the cost of installing good air conditioning, he said.

Jaros had this to say about the various methods of shading now in use:

• The old-fashioned canvas awning on the southside of a building can do more to reduce cooling demand than most combinations of heat-absorbing glass and Venetian blinds.

• The performance of such awnings can be improved by making them light in color on the southside and by providing a ventilating slot at the top.

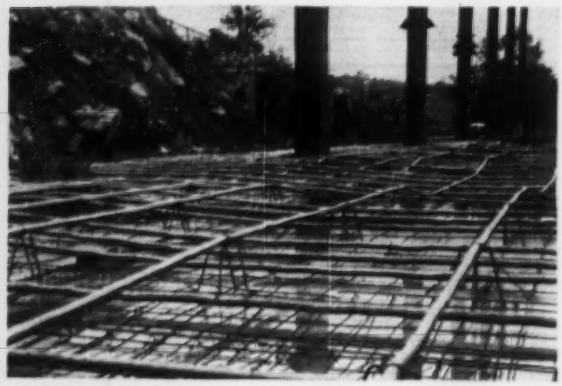
• Modern types of ventilating awnings built of aluminum or plastics will do as good a job as the canvas awning.

• Unfortunately, all of these—as well as the old-fashioned "wooden slat shutter" outside the window, which is also quite effective—suffer from a common and grave defect: they must be manipulated perhaps at several hundred distinct points in a building, and to do this, the windows must be opened and closed.

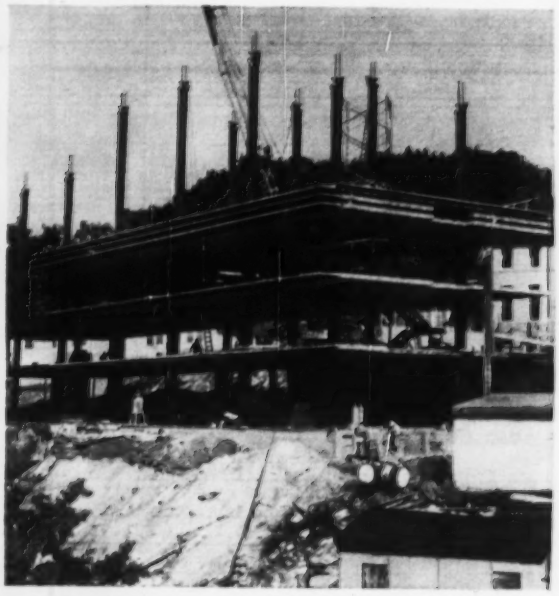
• For orientations where the sun is high in the sky (south facade in the northern hemisphere), projecting balconies or cornices can be arranged to do as effective a job as any sort of awning. However, this method of shading is less useful on easterly exposures, and almost useless on westerly, since late in the afternoon the sun sinks low.

• For east and west directions, the best shading methods are metal or concrete "jalousies", several feet out from the building or various schemes of vertical louvers.

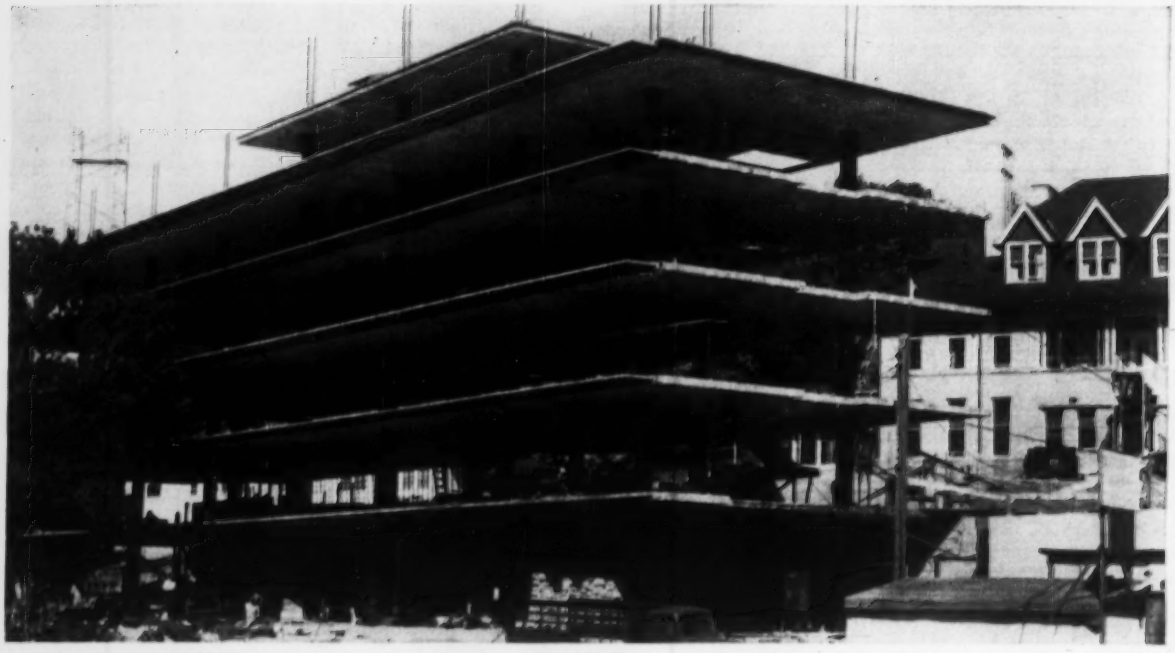
New in Lift-Slabs—Six Stories of Prestressed Slabs Raised . . .



1. CABLES laid in flexible sheathing are draped to vary the prestress in the floors and roof of the Litchfield County Hospital addition at Winsted, Conn. These slabs were formed at grade.



2. FIRST-STAGE LIFTING raises upper slabs to the top of the first tier of columns; then the second column tier is erected.



3. FINAL-STAGE LIFTING positions upper slabs. Next, the lifting collars at each column are pinned in place, after which shear blocks are welded to the columns and collars to anchor the slabs. The floors are 8½ in. thick, span 26 ft.

Six-Story Lift-Slab Completed

New England Lift Slab Corp., Boston, has raised the six prestressed slabs that form the floors and roof of the 62-ft-high addition to Litchfield County Hospital, Winsted, Conn.

The techniques used were described in detail in ENR Feb. 2, p. 43. The lifting was originally scheduled for last March but was delayed by delivery of steel columns, of which 14 were required. The columns are spaced 26 ft apart.

The slabs were cast at ground level, then raised with jacks atop the columns. Five are 182x43 ft; an irregular shaped one, 80x41 ft, serves as the solarium roof. All are 8½ in. thick. Concrete used was specified to have a 28-day compressive strength of 4,500 psi.

Cables for prestressing the slabs transversely and longitudinally consist of ten 0.196-in. dia wires in 1¼-in. dia flexible sheathing. The tendons are draped in a vertical plane to be near the bottom of the slab at midspan and near the top at the columns.

The tendons were placed in sheathing to prevent bond with the concrete initially. After the concrete attained sufficient strength, the wires were tensioned with a double-acting jack, the tendons being pulled in one step and a conical wedge being forced into place to

anchor them in the second step. Then, the wires were grouted in place.

The slabs were designed for live loads ranging from 40 to 180 lb per sq ft, the lightest loads being for the wards and the heaviest for radiography areas, where floors, walls and ceilings will be lead-lined. Also, movable equipment in this area will be extremely heavy.

The lifting operations were carried out in two stages. The first tier of columns erected was only 35 ft high. Lifting began with the jacking of the upper three slabs to the top of these columns. Then, the second, first and ground-floor slabs were raised to their final positions. After the columns were extended another 25 ft, the three upper slabs were raised to their permanent places. A penthouse for mechanical equipment is being erected atop the solarium roof.

During the lifting operation, the building was stabilized by attaching guy wires to the slab corners and anchoring the guys to concrete deadmen.

• **New slab-column attachment**—A new method was used on this job to connect the lifting collars to the columns. After the slabs were raised to the right height, 1¾-in. dia pins were shoved through the column flanges and through 1¼-in.-thick shear blocks, which later were welded to the inside of the column's flanges. Finally, a rigid connection between columns and collars was made by driving steel wedges between the tops of the collars and the columns. The upper side of the pinned shear plates also were welded to the underside of the collars.

Advantages claimed for this pin method of fastening the collars include a considerable reduction in amount of welding and lifting time.

Lifting cost was estimated at 37 cents per sq ft, and the prestressing operation, including placing and jacking, plus mild steel and wire fabric reinforcing, at about 70 cents per sq ft. Column erection and lifting took 4½ weeks.

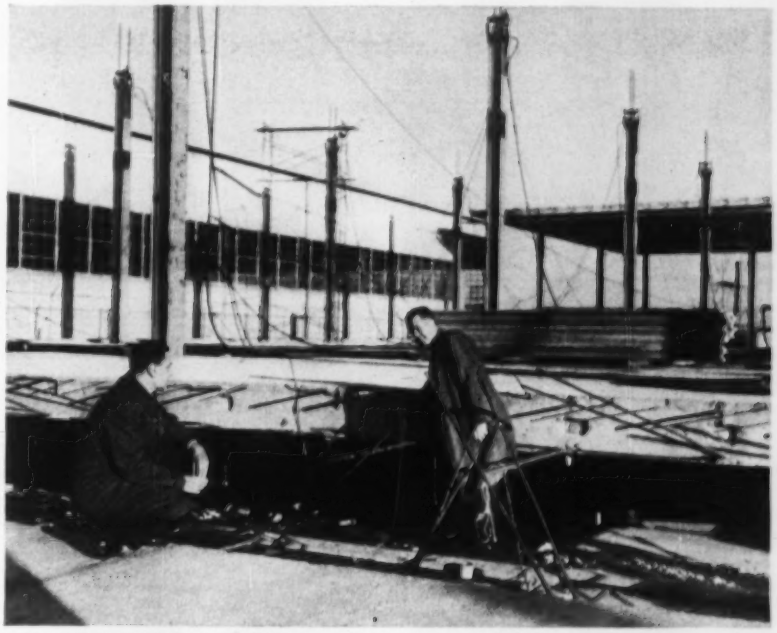
• **Building design**—The hospital addition will be enclosed with extensive window areas and light metal panels on the long sides. End walls will be masonry, 12 in. thick above the ground floor and 16 in. thick below. These walls are designed to take transverse wind loading on the structure.

Partitions will consist of 4-in. gypsum block, plastered on both sides.

Sherwood, Mills and Smith, Stamford, Conn., were the architects. Marchant and Minges, West Hartford, were the structural and mechanical engineers.

Prestressing was executed by A. F. Peaslee, Inc., Hartford, the general contractor. The Freyssinet Co., New York City, served as consultant on the prestressed concrete design.

. . . And a Weight-Lifting Record Set



A 1,400-TON SLAB rises 26 ft to roof an industrial plant in Lyndhurst, N. J.

Heaviest Lift-Slab Forms Roof

New England Lift Slab Corp. last week raised the heaviest lift-slab to date. Covering a 32,600 sq ft area, it weighed 1,466 tons.

Flanked by two 1,000-ton slabs, the record-breaking unit forms the center section of the roof of an industrial building being constructed for Standard Tool & Manufacturing Co. in Lyndhurst, N. J. It was cast on the ground floor and raised 26 ft by jacks atop 24 steel columns, which are spaced 40 ft c-c.

The jacks had to be operated close to the limit of their capacity (75 tons). In addition, the 24 hydraulic jacks used are the maximum that can be handled from a single console, or control unit, at present.

Weight of the reinforced concrete roof slabs was cut down by making them out of lightweight aggregate and using waffle construction. Corrugated fiberboard boxes, 34x34 in. by 13 in. deep, were used as forms. With a 3-in.-thick slab atop the boxes, the ribs formed are 16 in. deep and 6 in. wide. Concrete was specified to have a 28-day compressive strength of 3,000 psi.

• **Why design was chosen**—Selection of reinforced concrete for the roof of this plant building resulted principally because the owner wanted big bays and was not willing to wait for steel deliveries. However, steel columns could be easily obtained from warehouse stocks in time.

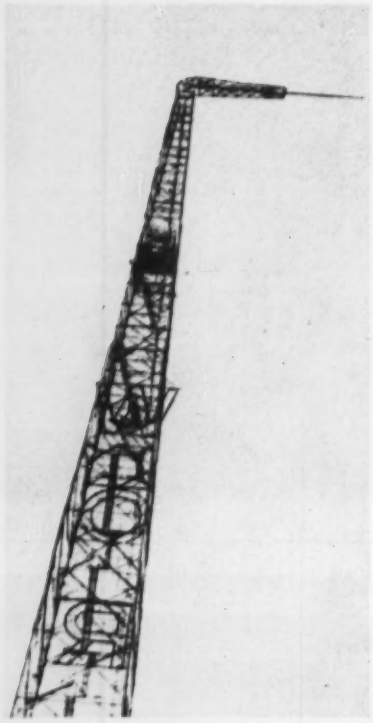
Cast-in-place concrete was ruled out because of the 26-ft height of the roof, which made falsework too expensive. Lift-slab construction proved to be the most economical method available for this job.

Size of the record-breaking slab was determined both by the capacity of the jacking equipment and of the control unit.

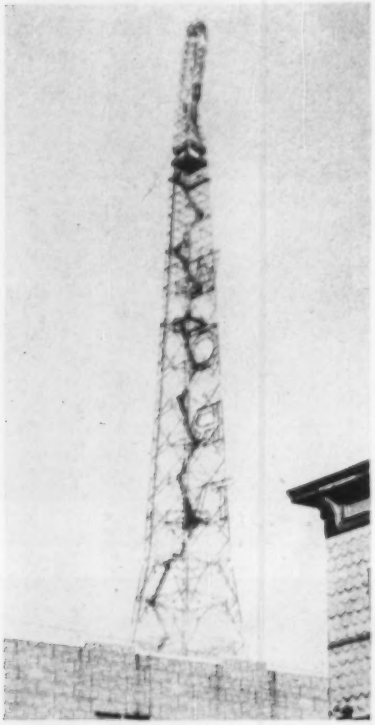
The columns were sized to permit the heavy slab to be lifted without any horizontal bracing and to assure lateral stability in the completed structure. The slabs were anchored to the columns by welding shear plates to the verticals and to cast-steel lifting collars that were embedded in the slabs. Weighing about 600 lb apiece, these collars not only serve as a shearhead but also provide a moment-resisting connection, for lateral stability.

The ceiling of the plant, formed by the three lift-slabs, lies in a continuous plane 26 ft 5 in. above the floor. Lighting, sprinkler and other services are included in a 20-in. layer below the ceiling.

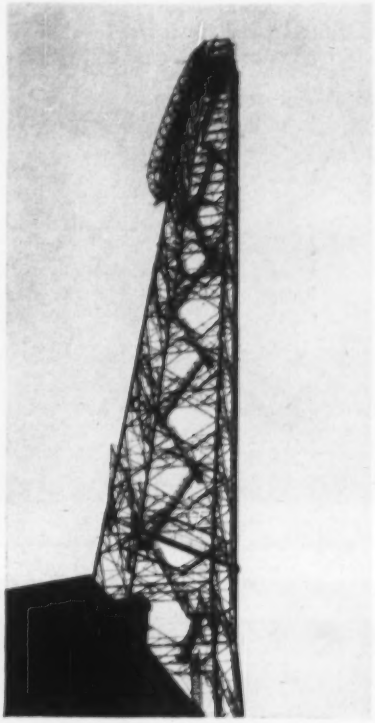
Powers & Kessler, New York City, were the architects. Garfinkel & Marenberg, also of New York City, were the structural engineers. Fred J. Botherton, Inc., is the general contractor on the project.



FIRST PULL folds damaged 105-ft top section and antenna . . .



RESULT is bend caused by impact and stage is now set for . . .



SECOND PULL and fold which makes tower safe for routine disassembly.

Riggers' Skill Folds Damaged Tower

On Thursday afternoon, Nov. 8, engineers in the center of densely populated North Bergen, N. J., were figuring the height of a television tower in terms of city blocks. For at 12:45 p.m. that day this unused 810-ft structure had been hit at the 705-ft level by a private plane, and four persons died.

The impact on the slender, four-legged steel tower tore out a 15-ft section of the southeast leg, as well as eight tension rods and two horizontal struts, and twisted two of the remaining legs more than a foot off line. Thus, there was real danger that the 120-ft, 6-ton section above the break would topple, probably destroying much of the remaining tower and many of the thickly clustered homes that surround the facility. More than 1,800 persons live within a four-block radius of the tower.

To the Gunnar A. Olsen Corp. of New York, fell the job of immediately securing the ruin. Olsen representatives, specialists in the erection, demolition and maintenance of antenna towers, were at the site within 45 minutes after the accident. Preliminary inspections indicated serious danger and city officials ordered an immediate evacuation of the area.

This is how it looked to Olsen: To reinforce the structure, men would have to work both under and on the dangerously-weakened upper section. To dismantle the structure by ordinary means would require placement of equipment above the break. Neither method was practical. There was nothing to do but fold the top over by pulling from the ground.

By 8:00 a.m. Friday all necessary equipment was at the site. In view of the precarious balance of the upper section, it was anybody's guess as to how much pull would be required to topple it. Taking no chances with the safety of his men, Olsen arranged to install a snatch block in such a way that, while two men were on the tower, the weight of all but 30 ft of the pulling cable would be carried on the lower, undamaged section of the tower.

This is how it was done. A 25-ton truck-mounted winch was placed to the west of the tower base. Two men went aloft with a single block and ¾-in. manila line. The block was lashed to the southeast leg just below the break. The line was fed through the block to the ground where it was attached to the ¾-in. cable at a point 30 ft from the dead end. The winch raised the cable to the block, and held it there while the 30-ft free end of the cable was shackled to the southeast leg just above the break. The men left the tower, and the winch operator slacked off on the rope holding the cable. The weight of the cable (600 lb) tilted the top an additional 5 to 7 deg, and a slight tug on the winch finished the job.

Tipping of the damaged section involved one danger that only those on the job knew about—the two-ton antenna at the top was held vertical by two snugly fitting collars placed 10 ft apart at the top of the main body of the tower. As a consequence, the antenna was held in position principally by its own weight. There was a possibility that during the overturning of the upper section, the antenna would skid out of the collars and become a flying spear 60 ft long. Fortunately, this did not happen.

What did happen was this: As the top section fell, it twisted so that its southeast leg knifed into the south face of the structure below, resulting in an interlocking of members. At the same time the entire part of the structure from the 570-ft level up was translated in a northeasterly direction with a maximum deflection of 12 ft near the 650-ft level. Nevertheless, since the antenna ended up almost directly over the lower southeast leg, equilibrium largely was re-

stored with the top section pushed into a damaged, but more or less stable lower section, the structure was relatively secure and work was suspended until Saturday morning.

The load cable had not been removed since it was to be used in folding the tower again—this time at the 570-ft level. In folding of the top section, the southwest and northwest legs had broken free at the bend. That left the inverted section supported only by the northeast leg, an angle now flattened into an 8 x ¾ in. plate. It was feared that this one remaining leg might tear under the pull needed to drop the next section, but luck helped the contractor. The impact of the falling top had sufficiently distorted the vertical members below to cause them to drop—though slowly—when pulled. At 9:30 a.m. the tower had been reduced to a height of 570 ft and all hanging components were being cabled to the rigid and virtually undamaged lower sections. Residents were permitted to return to their homes, and the contractor began the prosaic work of cutting up the folded section and telegraphing the small pieces of steel down a diagonal wire.

Niagara Power

FPC set to side-step state agency's application—next Congress the real hope

The question of who will develop U. S. power at Niagara Falls was up again in Washington last week. This time before the Federal Power Commission.

At stake is an application by the Power Authority of the State of New York for a license to build a $550-million power project, harnessing additional Niagara River water under terms of a 1950 U. S.-Canadian treaty.

FPC's Assistant General Counsel John C. Mason urged FPC in effect to wash its hands of the issue. He told the five-man commission it has no authority to license any firm or agency for the development because the Senate, in approving the treaty, reserved to Congress the right to determine the firm or agency that develops the power.

On the other hand, PASNY's attorneys, Philip C. Jessup and Samuel I. Rosenman, challenged the validity of the treaty reservation adopted by the Senate. They argued—with support from New York's Senator-elect Jacob K. Javits—that the reservation amounted to an unconstitutional attempt to usurp FPC authority.

FPC is expected to make its ruling at a fairly early date. No matter what it rules, however, the issue is certain to come up again in the Congress.

Dixon-Yates Epilog

Memphis plans 750,000-kw steam plant by February '59

The City of Memphis has revealed details of its steam plant construction program, the announcement of which in mid-1955 put an end to the Dixon-Yates imbroglio.

The plan is an ambitious one, calling for an immediate $154-million revenue bond issue to allow construction of a 750,000-kw plant by February 1959, and another $123 million for an additional 750,000 kw to be in service by 1965.

Just the first phase, comprising three 250,000-kw turbo-generator units, is thought to be the largest plant ever undertaken by a municipality as a single project.

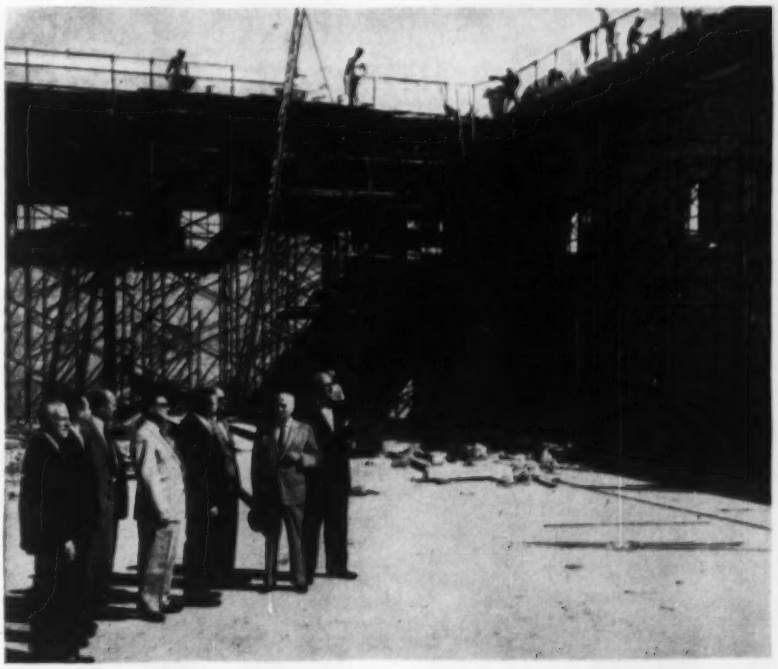
Memphis now buys its electric power from TVA for about 4 mills per kwh. Cost of generating its own power will be about 4.3 to 4.4 mills in 1962, which should compare favorably with TVA's rate at that time, according to Burns & Roe, Inc., consultants to the city.

An agreement already has been made with TVA to interconnect the Memphis generators with TVA's transmission network, thereby allowing the generators to be sized on an area basis to obtain advantage from lower cost per kw for larger units and from higher operating efficiency. Interconnection also provides advantages during emergencies and peak demands since TVA has a winter peak and Memphis' peak occurs during summer.

The first three turbo-generators, nameplated at 250,000 kw, are to have a total net capability of 812,500 kw and a best point net heat rate, when operating on coal, of 8,825 Btu per kwh when operating at the probable local load factor of 62%, heat rate is expected to be 9,500 Btu.

Turbines are being designed for 2,400 psi steam pressure at the turbine throttle and a temperature of 1,050 F. with the same reheat temperature. Each turbo-generator will be served by one cyclone furnace-type boiler to be fired by natural gas or coal. The former is to be used whenever the city's Gas Division has a surplus.

City of Memphis officials are making much of the point that revenue bond financing will make the program "an outstanding example of public power without public subsidy."



Bigger Hall for Biggest Road Show

The Chicago International Amphitheater—already said to be the largest exposition hall in the United States—is being enlarged now in an effort to house the Jan. 28-Feb. 2 Road Show of the American Road Builders Association. A new addition, 410x270 ft., has been put under construction and completion set in time for the show. With it, the amphitheater will provide as much display area as 12 football fields for the more than 250 manufacturers who will exhibit their wares at the show.

LONG-SPAN GIRDER and its columns are among the first steel members to be erected for a record-size bolted frame as . . .

Bolting Begins for 38-Story Building

NEW MODEL IMPACT WRENCH speeds tightening of high-tensile bolts. The tool develops 50% more torque but is lighter than the previous model.

The steel frame for the world's tallest bolted building is rising at a rapid rate as a new-model impact wrench makes quick work of the connections. The schedule calls for 13,000 tons of steel for the 38-story office building, at 666 Fifth Ave., in New York City, to be erected in 24 weeks.

Bolts for the connections range from ⅞ to 1¼ in. in diameter. Made of high-tensile-strength steel, they are being tensioned to about 55,000 psi.

The air-operated wrench being used on this project, developed by Chicago Pneumatic Tool Co., weighs 24¼ lb. It is reported to be 7 lb lighter and 2 in. shorter than any other 1¼-in. capacity impact wrench with a 1-in. square drive. It has up to 50% more torque output than the model it is replacing. In addition, improved clutch efficiency, it is claimed, reduces air needs up to 30%.

• **Novel design**—The $40-million skyscraper, which will be air conditioned, will occupy a 61,000-sq ft site extending between 52nd and 53rd St. and fronting on Fifth Ave. It will have a 14-story base, with floor areas ranging from 56,700 to 28,400 sq ft, and a 24-story tower with 18,000-sq ft floors. Net rentable area will be 1,050,000 sq ft.

The building will feature an "open" colonnaded street floor with a 30-ft wide arcade running back 100 ft from Fifth Ave. to the lobby and two other arcades leading from the side street to the lobby (ENR Feb. 24, 1955, p. 25). The 54-ft steel girder spanning the main entrance to the building was erected early this month (see photo). Weighing 26 tons, it is 56 in. high. Two pairs of derricks, operating in relay, erected it.

The exterior of the building will have an unusual facing of embossed, polished aluminum spandrels and 26-in. wide white mullions. Originally planned to be embossed with diamond shapes (ENR Feb. 16, p. 43), the anodized aluminum panels will now be fabricated with small squares.

Mullions, which will extend the full height of the building, will consist of a 20-in. band of white porcelain enamel set in a frame of 3-in. wide polished aluminum.

To permit office modules of 7, 9½, 12, 14½ ft, etc., plans call for windows about 7 ft wide, partitions being placed in line with the mullions. The windows will be vertically pivoted, to permit cleaning from inside.

Carson & Lundin, New York City, are the architects for the building. Victor Mayper is the consulting structural engineer. The steel is being erected by Bethlehem Steel Co. Tishman Realty & Construction Co. is the owner-builder.

New York Is Home

The national engineering societies will remain

New York City will remain the headquarters of the major national engineering societies.

United Engineering Trustees, Inc., has announced the signing of a contract with the architectural firm of Shreve, Lamb & Harmon Associates, New York, for preliminary plans and studies for a new engineering center in midtown Manhattan. UET is the joint corporate agency of the American Society of Civil Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers. According to Walter J. Barrett, UET president and transmission maintenance engineer of the New Jersey Bell Telephone Co., of the American Institute of Chemical Engineers, also has been approved as a UET member and will participate in the enterprise.

The need for modern and enlarged quarters has been apparent for some time in the present 16-story Engineering Societies Building at 33 West 39th St. Over the last two years the engineering societies have considered offers from several other cities to move away from New York, but the final decision, based on a study by a firm of management consultants, McKinsey & Co., has been to remain in New York. The societies also have given approval to a location in midtown Manhattan.

Financing a new headquarters will require several million dollars. There will be contributions from the individual societies, and UET also has received the assurance of cooperation from a group of industrialists as well as educators.

It is understood that the preliminary studies of the architects are to include comparisons of cost and desirability of remodeling the present building, tearing it down and replacing with a new structure or building on an entirely different site.

Certification

Machinery for certifying sanitary engineers is now set up and starting to work

Certification of sanitary engineers has become a reality. Since July of this year, 200 applications for certification have been received and are being handled by the American Sanitary Engineering Intersociety Board. (ENR Feb. 16, p. 50).

Last week before the Engineering and Sanitation Section of the American Public Health Association's 85th annual meeting at Atlantic City, George O. Pierce of the World Health Organization and Mark D. Hollis of the U. S. Public Health Service submitted a detailed progress report of the ASEIB.

The board was organized in October 1955, to "improve the practice, elevate the standards and advance the cause of sanitary engineering." In the last year it has established criteria for certification, made arrangements for examination of applicants, and has already reviewed several applications for certification.

The first certificates are expected to be issued by July of next year. They will go to those who have had a minimum of 15 years of professional practice and "have achieved a high standing in sanitary engineering," and therefore are not required to take an examination. Other applicants will take written and oral tests in the coming months.

A specialty committee of the board evaluates the applicants and recommends to the board those qualified to receive Certificates of Special Knowledge in one or more of five fields of sanitary engineering—water supply and waste water disposal, public health engineering, industrial hygiene, radiation hygiene and hazard control, air pollution control.

The names of the engineers who achieve certification will be carried on a roster to be known as the American Academy of Sanitary Engineering.

• **How to certify**—Briefly, the requirements for certification are as follows:

- Be registered as a professional engineer.
- Be a graduate of an accredited engineering college.
- Have eight years of sanitary engineering experience.
- Be of good moral character and of high ethical and professional standing.
- Have four years of responsible charge of work in sanitary engineering.
- Take an oral and written examination.

For those with 15 years experience and unusually high qualifications, application must be made by July 1, 1957, to certify without examination.

Detailed information concerning the certification procedure is contained in a bulletin of the ASEIB. Write to: Office of the Secretary, 33 W. 39 St., New York 18, N. Y.

Building Officials Plan Housing and Sign Codes

Tentative drafts of a Uniform Housing Code and Uniform Sign Code were submitted at the 34th annual meeting of the International Conference of Building Officials (formerly Pacific Coast Building Officials Conference) in Palm Springs. The drafts are now in the hands of committees, with final action scheduled for the 1957 annual business meeting.

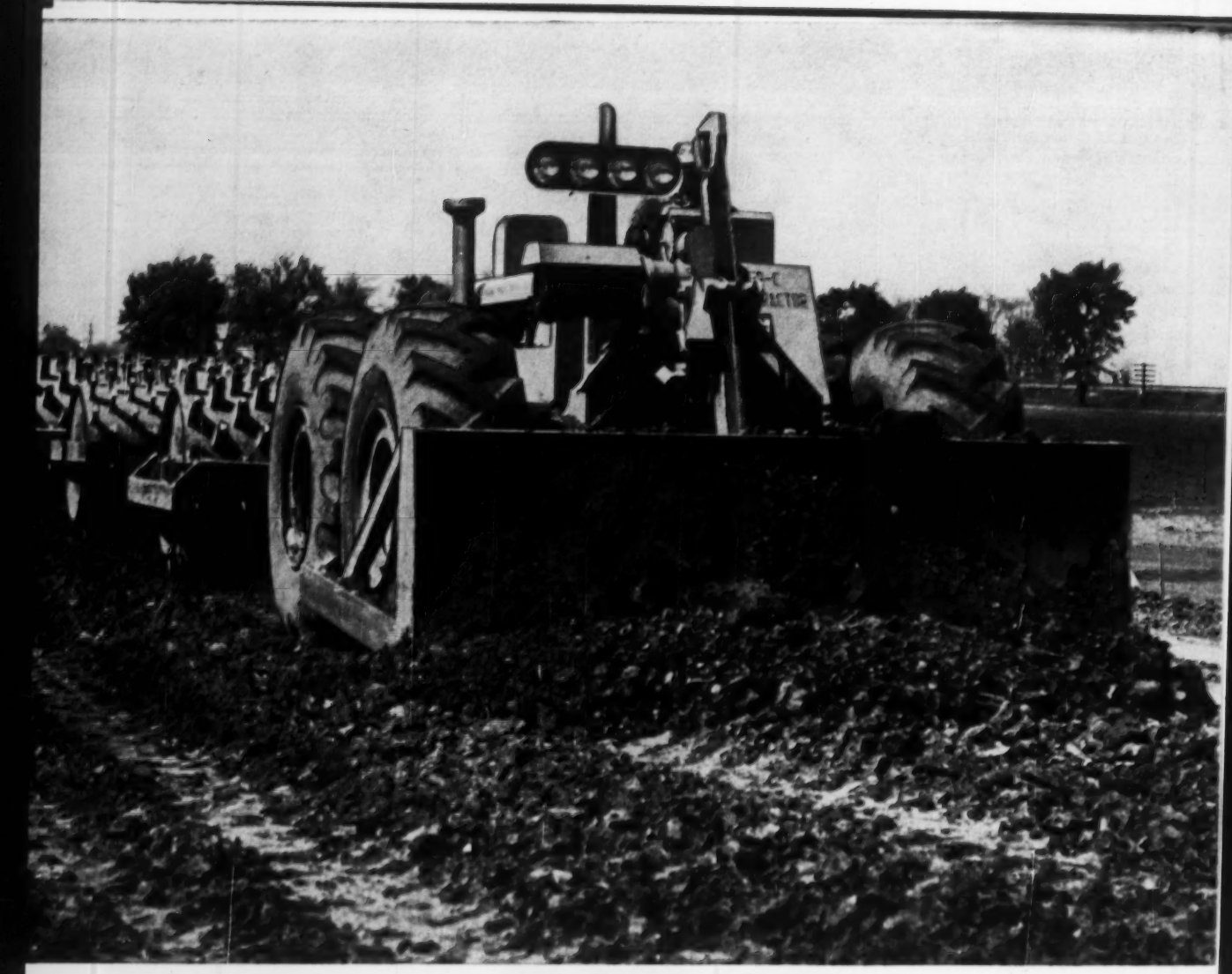
C. S. McCormick, building superintendent, Tacoma, Wash., was re-elected president; Marcus S. Carlson, building official, Alameda County, Calif., first vice president; and Cassatt D. Griffin, superintendent of building, Los Angeles County, second vice president and treasurer.

Wisconsin's Road Program Will Set a State Record

The Wisconsin State Highway Commission, working with federal and local governments, said last week that it will finance the largest roadbuilding program in the state's history in 1957.

Cost of the work will be $111.9 million, topping 1956 by some $5 million.

A breakdown shows that $57.3 million will go for work on the state's trunk highway system and federal-aid projects in local communities; $44.6 million for work on the state's nearly 500 miles of road on the federal interstate system, and $10 million for secondary roads.



How to get more out of your tractors

STUDY POWER ... Power is of prime importance, but, today, you need to consider engine horsepower as a *source,* not a "force". Maximum horsepower ratings considered alone are without meaning. Ratings must be studied across the speed range to measure their effectiveness in push-pull effort at desired operating speeds. Also, you need to check the smoothness with which power is applied; the time-factor in making a deep cut, and the difficulties in shifting which may discourage an operator from using the proper gear ratios to apply power with greatest time efficiency. Check, too, the percentage of time where you use the combination of power and traction for maximum push-pull. You will find power at maximum "drawbar" is seldom used for tractive effort. Since *all* tractors are able to spin their tracks or wheels in low gear on normal footing, horsepower should be considered only as a power source ... available for use in *any direction.* The most effective power combination lets you work at highest practical speeds which job conditions permit. (See table at right.)

STUDY TRACTION ... Pounds-pull is a combination of power *and traction.* Compare it ... but at *your* desired operating speeds. Usable pounds-pull results from many factors: type of material, conditions underfoot, weight of tractor, and forward speed. From the table at right, you can see that Tournatractor pounds-pull compares favorably with track-type tractors from 2.0 mph up. Even if Tournatractor takes a thinner initial cut, its time advantages in stepping up speeds, gives you a faster overall cycle. Wide-base rubber tires now available on Tournatractor can give still more traction on rubber. Its anti-friction drive and minimum of moving parts give you far less loss in power transmitted to ground-contact. It eliminates loss of power due to accumulation of mud and dust in tracks. Its compaction characteristics give a major advantage on fills and haul roads. Its low-pressure air-cushion and flexing rubber-treads can provide even better traction than crawlers in many materials. They permit work and travel without planking over pavement, curbs, and rocky footing.

STUDY SPEED ... Speed today is a major dimension in every piece of equipment you use. For years crawler engineers have struggled with this problem. They have made improvements, but find it difficult to overcome the friction-losses and wear-costs involved in stepping-up crawler speeds. With 4-wheel-drive, instant-shift, constant-mesh transmission, torque converter, instant controls, and anti-friction-drive, Tournatractor has a combination of speed factors not equalled by any crawler. With twice top-speed of heavy-duty crawlers, today's Tournatractor has many other savings in each cycle that contribute to its *speed* performance. You've seen the load build up on a crawler's blade, but have you checked the other components of the crawler's day? Carrying-the-load, spread, return, wait-and-travel time, are all part of your cost and call for long-term time-study. Figure, too, the few times where crawler maximum-drawbar at low speed gives you a production advantage; then compare with the much larger time percentage where extra speed can pay off in profit.

STUDY MOBILITY ... Crawler-moves, job-to-job, or from section to section, require moving in of truck and flatbed, loading and unloading time, plus actual travel-time. These high moving costs make crawlers expensive on hit-and-run assignments. Yet today's large-area contracts need far more equipment movement than ever before. Tournatractor can be at work a mile away in less than 5 minutes ... lets your pushers be as flexible as your prime-mover scrapers when moving to a new area ... for instance, to work drier borrow during wet weather. Mobility also gives you flexibility to quickly balance pushers as well as scrapers when hauls vary. It lets you use idle time to improve haul roads, detours, or drainage. It makes quickly available ripper, stumper, or compaction service anywhere on your project. Mobility is an important dimension in today's dirtmoving ... will be more important in your larger future. Think it over, remember some of your last year's projects and count the times when a 17.4 mph tractor could have saved you money and given you bigger profits.

Write for complete Tournatractor specifications.

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Time study production relationship of pull to speed

TRACTOR	HP with torque converter	Speeds in MPH		Pounds of pulling effort			
		Forward	Reverse	1.5 mph	2.0 mph	2.5 mph	3.0 mph
CAT D8	191	0 to 3.6 low 0 to 7.4 high	0 to 3.6 low 0 to 7.4 high	30,000	24,000	18,000	15,000
IH TD24	200	0 to 7.6	0 to 6.6	32,500	22,500	18,000	15,000
TOURNATRACTOR	208	0 to 17.4	0 to 7.3	24,700	23,500	18,800	15,650
AC HD21	204	0 to 3.0 low 0 to 7.5 high	0 to 5.5	Pounds-pull curve not shown in manufacturer's literature available to us.			

Note: Figures taken from manufacturers' specification sheets available to us at time of printing. Tournatractor—Trademark Reg. U.S. Pat. Off. CT-1150-G

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Building a Drydock to Hatch an Aircraft

First Stage: Sheetpile cells (here being partly filled with dredged material) will form permanent sidewalls of 1,100 x 150-ft drydock in which supercarrier will be built. New Philadelphia-Camden Bridge is a neighbor.

Next: Carrying forest of 2-in. grout pipes, rafts cover about a third of length of dock, as underwater grouting of 140,000-cu-yd floor slab proceeds. Placing of slab took about six weeks of continuous operation.

Carrier

When you consider the problems involved in designing and building New York Shipbuilding Co.'s supercarrier-size new drydock at Camden, N. J., you must first consider the central problems of the construction speed required and the strict money limits imposed.

For from those problems flowed designs that have resulted in the longest continuous concreting (in this case grouting) operation on record—6 weeks—during which 60,000 cu yd of grout was injected into preplaced aggregate to produce 140,000 cu yd of finished concrete.

The longest, largest, continuous placement of conventional concrete—where aggregates as well as mortar go through the mixers—was on the east anchorage of the Delaware Memorial Bridge at Wilmington, Del., where 27,000 cu yd were placed in 7.4 days, or 3,600 cu yd per day. Actually the average daily "production" of concrete on the drydock was close to this—3,300 cu yd—but the "placement" of concrete was considerably smaller—about 1,400 cu yd per day.)

The problems of construction speed and money also sparked a stripped-down, streamlined general design that permitted the contractor to work right up to or even ahead of the availability of the detailed design.

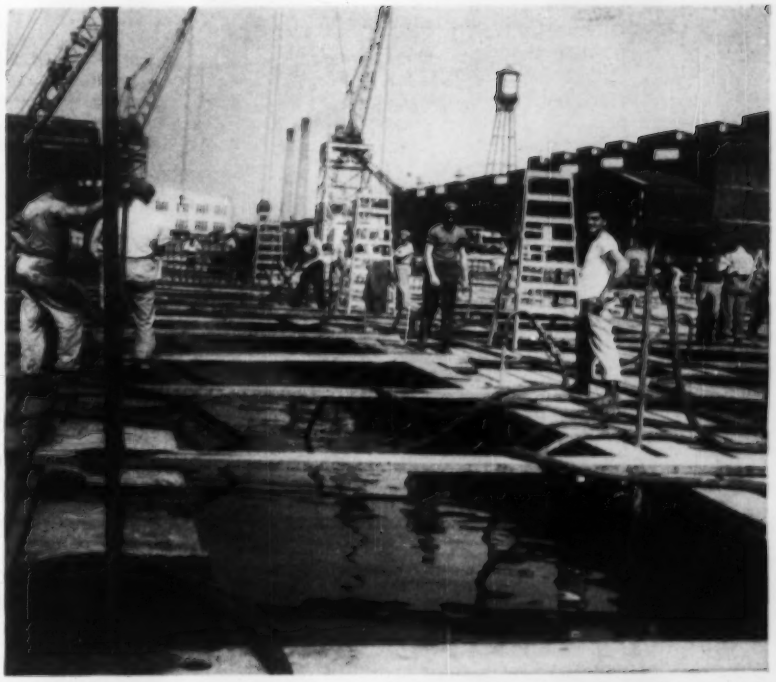
The background of this situation is simply stated: Late in October, 1955, New York Ship signed a $120-million contract with the U.S. Navy, for construction of one of the immense "Forrestal" class aircraft carriers. A provision in the contract called for laying the keel of the big ship by the end of December, 1956 (sub-assemblies for the carrier, meanwhile, would begin to be made up immediately).

The difficulty was that New York Ship didn't have a graving dock big enough for the job.

The shipbuilding company did, however, have the space in which to build such a dock—a waste area on the south end of its three-mile long riverfront along the Delaware just opposite Philadelphia, and adjacent to the new Walt Whitman bridge.

The shipbuilder wasted no time. It alerted its parent company—Merritt, Chapman & Scott of New York (which would act as general contractor and supervisor), called in Parsons, Brinckerhoff, Hall & MacDonald as consulting engineers—and at the same time set American Dredging Company to work removing muck, silt and an accumulation of trash on the site.

What it wanted, said New York Ship, was this:



Grout pipes, shown here being serviced from small rafts and planking, are connected by hoses to pumping station. Pipes extend into 24-ft-thick traprock blanket, are drawn upward as grout rises.

A graving dock 1,100 ft long, 150 ft wide, with a maximum depth (below the river's mean high water line at El 107.5) of 43 ft, with sufficient facilities—but no frills—for the construction of a supercarrier. Such a dock is comparable to the largest now in use by the U.S. Navy.

And, added the owner, it wanted this dock to cost not more than about $10 million, and in shape for keel-laying within 12 months.

• **Enclosure**—First move for the engineers was a thorough examination of the site and what lay under it—and design of a cellular diaphragm-type sheetpile cofferdam to enclose the area.

The diaphragm cells on the two long sides and at the head end will remain in place to form permanent sidewalls of the completed dock. Circular cells at the river end will be removed after placement of reinforced concrete floor and end walls, which will contain the caisson (gate) seat and pumping equipment. The cells on the sides and the head end (except at the corners) are roughly of rectangular shape, with rounded ends—thus giving a scalloped effect to the inside wall of the dock—and are 54 ft 6 in. in height and 35 ft 8 in. wide. The cells were to be filled hydraulically with select sandy material.

The 15-in.-wide sheets were to be ½ in. thick, driven to El 55, and cut off at El 107.5 (mhw). Special care was to be exercised in filling the cells, to assure a differential of not more than 5 ft between adjoining cells.

• **But how about the floor?**—At first glance, a relieved-type floor-slab—underlain by a sand and gravel blanket draining to pumps to control uplift pressures—seemed to be indicated.

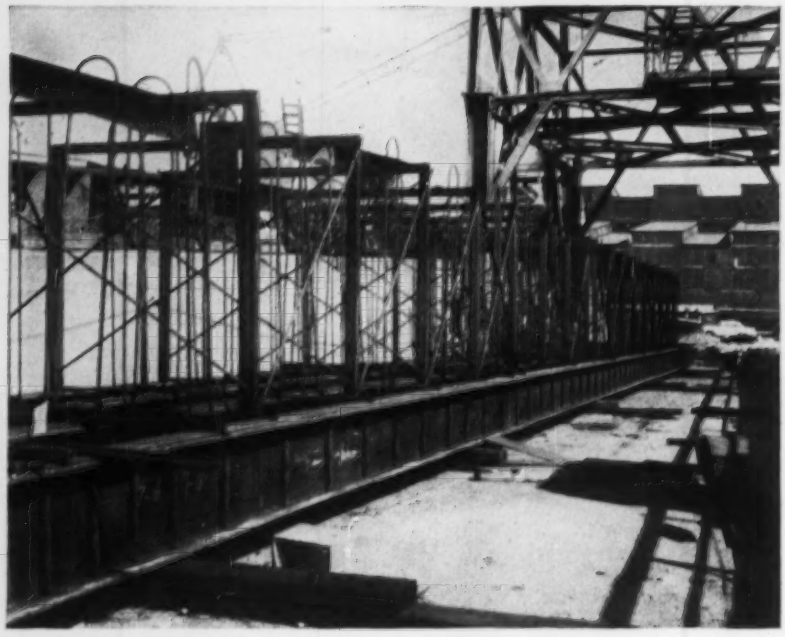
But the soil investigations showed immediate trouble—a water table so high and water in such quantities that the cost of continuous pumping over an extended period would far outweigh the savings on the relieved-type floor slab. Shipbuilders figured a couple of years for construction of the carrier—and engineers felt that pumping would have to be uninterrupted for that full period to prevent damage to the dock by the heavy uplift pressure.

Worse, such heavy and continuous pumping would have required immediate re-charging of the surrounding area, lest foundations be weakened in surrounding commercial establishments, and lest the drawdown be so great that many industrial plants would be unable to use present groundwater supplies.

• **Gravity will do it**—The answer had to be a gravity slab, held in place by a combination of its own weight, friction on the steel sidewalls of the dock itself, plus some allowance for reduced hydrostatic head due to impedance of groundwater moving through surrounding strata.

Final design, then, was for an unreinforced concrete slab, roughly trap-

. . . Drydock—Driving the cell sheet



Reinforcing cages, like this one (102 ft long), will be placed under water at the river end of dock to support sidewalls and gate.

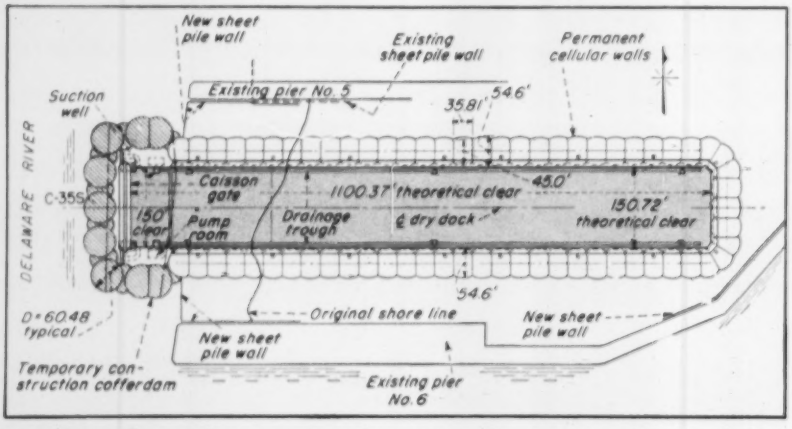
ezoidal in section, varying from 23 to 25 ft thick at the centerline, and from 16 to 18 ft in thickness at the sides.

The slab had to be placed under water its full 1,100 ft length—something over 140,000 cu yd of finished concrete. The Prepakt Concrete Co. of Cleveland, a division of Intrusion-Prepakt, Inc., which had recently completed a similar job with the same contractor on foundations for the Mackinac Bridge (a 91,000 cu yd block of concrete being the largest—ENR Jan. 27, 1955 p 35) was engaged to work out details of the unprecedented operation that was planned.

In detail, the final program was this: Aggregate would be traprock, brought in by barge from about 20 miles upriver, size of the rock varying from a maximum of 6 in. down to 2% passing a ½-in. screen. The rock was to be placed to the full depth of the proposed gravity slab, screeded level by drags, and then grout pipes placed in rows, 10 ft on centers in previously driven casings penetrating the rock.

To insure continuous grouting over an estimated six weeks of operations, the initial pipe installation would cover about a third of the total length of the dock, rows of pipes then being leap-frogged over others as the active front of the grout moved riverward.

At the river end of the dock, in the 80 x 150 ft area that will be the site of the gate, sill, and pump houses, reinforcing cages would have to be placed in the rock fill.



Location, dimension, construction of new drydock are clear in drawing. Area between Pier No. 5 and new dock is to be filled in to make added working space.

• **Work starts**—With these matters settled in general—but with design details still on the engineers' drafting boards, MC&S moved a 400-man crew and heavy equipment onto the scene.

Under the previous contract, American Dredging had removed 730,000 cu yd of material, to form a deep, U-shaped area. Now MC&S brought in a cutter dredge to take the underwater excavation down to firm bottom—a process involving removal of another 140,000 cu yd of material.

Ready for driving of the 8,400 sheets that make up the cells, MC&S superintendent Donald McGregor found immediate trouble in the form of areas of cemented river sand of the consistency of rather lean concrete—so hard that tests showed it took about 1,800 blows on a standard 2-in. spoon to penetrate 1 ft. As a result, all but a few of the sheets had to be jetted into place.

Working only a very small jump behind the engineers, the contractor began a series of concurrent operations: Bringing in traprock by barge from a point about 20 miles upriver; fabricating comparatively large cages of reinforcing steel that must be placed under water and in the rock fill in the river end of the dock to reinforce the floor slab at this point against uplift—in a section where part of the weight is achieved by the added weight of the sidewalls; and arranging for plant setup and operation of the carefully-controlled underwater grouting.

Just before placing the rock, MC&S found an added problem: One cell at the river end had been omitted, to permit water access to the dock for the rock barges, tugs, and floating equipment. Heavy deposits of silt also came in from the river through the gap—to depths of up to 8 in. and had to be removed. To stop this flow, a line of sheetpiles was driven and cut off at an elevation of 20 ft above the dredged ground level, in order to permit continued access of waterborne equipment.

The reinforcing cages—made up of 18-in. steel I-beams spaced 2 ft on centers and reinforcing bars—are to be placed transversely in the river end of the dock, in a section 100 ft long and 210 ft wide. To insure accurate placing, a series of steel stub piles are placed in the rock blanket, down to—but not driven into—the dredged bottom. The tops of these piles will be levelled exactly, and the cages lowered and placed by divers. The cages will be placed in three sections—those at each side being 40 ft long, those in the center 102 ft long, ends of the sections overlapping to provide continuity under the side walls, floor and gate structure.

• **Concrete mixing**—Meanwhile, working with the contractor and the engi-

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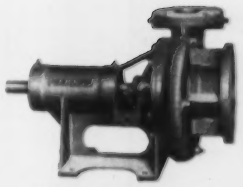

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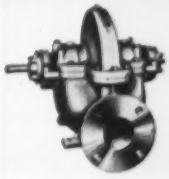

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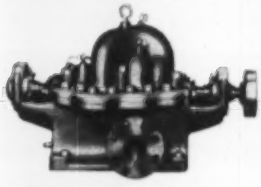

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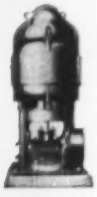

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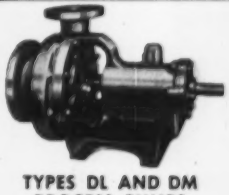

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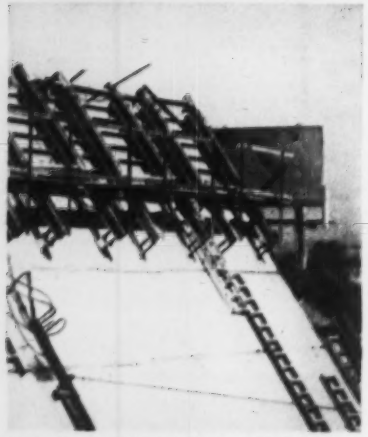
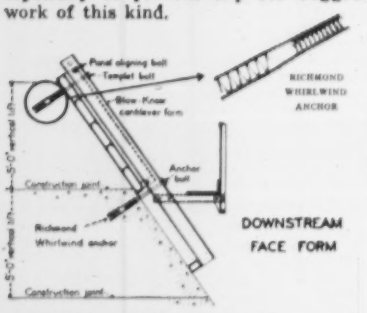


Merritt-Chapman & Scott and The Savin Construction Corp., contractors, used 55,800 Richmond Whirlwind Anchors without slip or spall in this vast dam construction at American River, Folsom, California.

Economies with Richmond Whirlwind Anchor

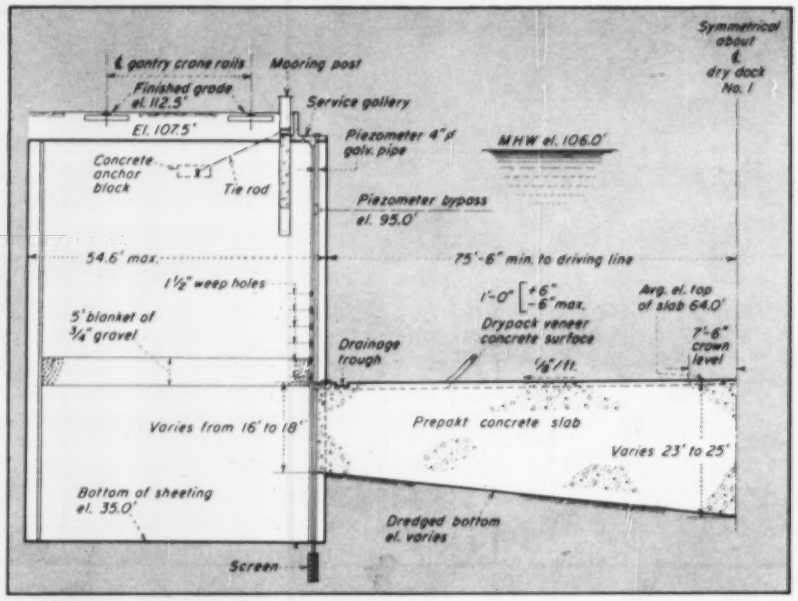
In dam construction like the above, considerable speed and economy are to be gained by pouring successive monoliths in 5 ft. lifts into steel cantilevered forms. Success of this money-saving method depends, however, on one-point form anchorage that will positively withstand massive overhead pours and loads imposed from all directions. Richmond's *Whirlwind* anchor was designed especially to prevent slip for rugged work of this kind.



These Richmond anchors are mounted on the form before each monolith is started. Installation is easy. The *Whirlwind* is made with double coils, one coil takes the form bolt, the other supplies added anchorage to prevent slip in concrete during its low early strength period. There is no spalling. Richmond's development of these special anchors has been in large part responsible for the constantly increasing popularity of this fast, more economical, anchorage and pouring method.

For more information, or a copy of the Richmond Handbook of tying devices, anchorages and accessories for concrete construction, write: RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N. Y. or 315 S. 4th St., St. Joseph, Mo.

. . . Drydock—Placing the concrete



Section through sidewall of dock indicates use of sand-filled cells for walls, tie-in of gravity floor and mooring posts to firm anchorage.

neers, engineers and consultants for the Prepakt organization had been preparing specification for the mix and plans for the grouting operation.

A batching plant was erected on the south side of the new dock, so that it could be served by barges bringing in sand, and by railroad tracks where cement and fly-ash could be delivered. A floating crane feeds the batcher, which is now operating at the rate of about 85 cu yd of grout per hour. This rate results roughly in 5,000 cu yd of slab per 24 hours of operation.

The mix design, prepared by Prof. R. E. Davis of the University of California, calls for: Three parts cement, two parts fly ash, eight parts of blended sand, an intrusion aid, and water. The cement content has been purposely kept on the low side, to hold down the heat of hydration. Design strength is 2,500 psi at 28 days, although samples that have been taken indicate strength exceeding 4,000 psi.

The plant is designed to batch automatically into a dual-weighing hopper; the intrusion aid is introduced directly into the two mixers that are required to maintain a uniform mortar production rate (a third mixer is provided for standby capacity).

The mixers discharge into agitators, from which pumps take the mortar through several hundred feet of lines that connect to a secondary pumping station, placed on skids at the dockside. At this station, the mortar again goes into agitators, for continued mixing until it is drawn off by the pumps.

• **Placing**—The mortar placing is done through lines of 2-in. pipes placed in casings driven through the traprock on 10 ft centers and connected to the secondary pumping station by rubber pressure hoses. The casings are removed as soon as the pipe is inserted, and the pipes are raised as the mortar rises in the rock, being entirely removed at the end of the operation.

Placement began at the head end of the dock, with pipes so placed as to cover roughly one-third of its length. This amount of piping is sufficient to insure there will be no interruption to the advancing face of the mortar, as the pipes are shifted, leapfrog fashion, toward the river end of the dock.

In order to support the grout pipes, provide a working platform, and support a series of sounding wells, used to measure the depth and progress of the grout face within the rock, the contractor built several dozen small rafts (of old oil drums and planking) which give the site the appearance of an oversize and very crowded swimming pool. The little rafts (roughly 8 ft square) are lifted by crane as the operation moves forward.

The face of the mortar as it advances through the aggregate is essentially a plane surface, sloped at the angle of repose of the mortar under water—about 1 on 5. It was essential that pumping be started on the center line of the drydock, and work out both ways to the sides, so as to build up this sloped plane surface before the advance down the length of the dock started.

Once a uniformly sloping mortar face

Convert gravel pit to Drive-In theater site

Matched speed and traction of big rubber tires on pusher and scraper unit speeded up cycles. Single Tournatractor replaced 2 crawlers on this push-work.

Dallas movie-goers now watch current films at a new drive-in theater which was, until recently, a worked-out and abandoned gravel pit. Theater programs could read: "Earthmoving by George O. Walker Construction Co., Dallas, Texas".

Filling and leveling a gravel pit is a unique way to build a theater — but Texans like to do the unusual. So Walker moved in...loaded, hauled, and spread 120,000 yds. of sand and caliche to turn the irregular hole-in-the-ground into an attractive theater setting.

To move this yardage, Walker used a LeTourneau-Westinghouse team of 5 D Tournapulls and 1 208 hp rubber-tired C Tournatractor.

Filled from old spoil banks

Fill for the pit was obtained by cutting down most of the banks, together with old spoil piles on the property, to form a symmetrical amphitheater. First a dozer leveled off the steepest spoil ridges on the borrow section...then Tournapulls moved in for the king-size dirt-moving task.

Averaging 5-yd. loads per trip, the "D's" loaded on banks...hauled down into pit for spread. Returning, Tournapull operators handled their own haul-road maintenance, by dropping scraper's blade to smooth out haul route.

2,400-ft. cycle in 3 min. 22 sec.

On a cycle distance of 2400', "D's" averaged 3 min. 22 sec. Rigs loaded in 20 sec., over a 60' distance. Loaded Tournapulls completed 1120' haul in 1 min. 36 sec., returned in 1 min. 16 sec. Spreads over a 100' distance, took 10 sec.

Dirtmoving was done during the winter months, when rains and cold weather made work difficult. Yet Tournapull production remained steady under all weather conditions. When an unusual 4" snowfall hit Dallas, for example, it interrupted work for only half a day. When the storm was over, rigs had no trouble operating in snow.

Out-perform comparable scrapers

Superintendent J. K. Mason had this to say about his D Tournapulls: "In my opinion, Tournapulls will outperform any similar equipment on the market today. They will out-turn them, out-run them, and load faster! Anything you can get into a 'D' you can get out fast — and that's more than you can say for many other scrapers."

Owner George Walker found that his one Tournatractor handles the pushing job which formerly required 2 crawler-pushers. "This rubber-tired tractor is much less expensive to operate than crawlers," he stated. "Maintenance and upkeep costs, both for D Tournapulls and Tournatractor, are low."

Now 9 yards heaped

The improved D 'Pull, now available, has 7.3 cu. yds. struck capacity and 9 cu. yds. heaped. With its narrow 8' width, and axle-loads within allowable weight limits, rig is roadable without special permit. Write for details. Find out how this machine can make profits for you.

Tournapull, Tournatractor—Trademark Reg. U.S. Pat. Off. DP-1038-8-b

120,000 yds. of sand and caliche were moved in 60 days to transform gravel pit into amphitheater for a drive-in theater at Dallas, Texas. Work-team included 5 Tournapulls, 1 Tournatractor, and 3 crawlers.

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

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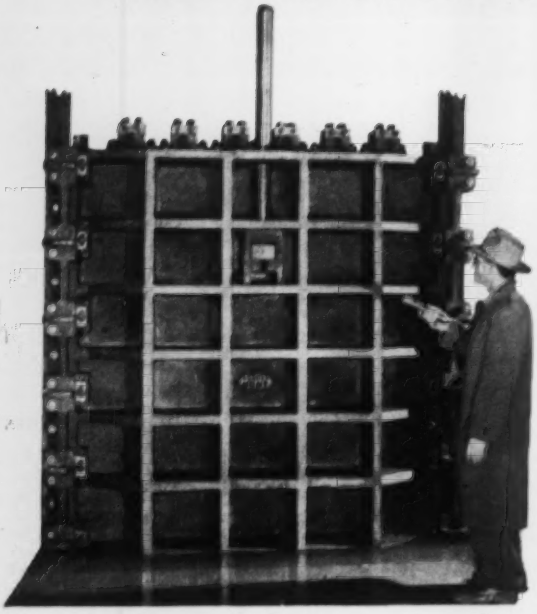

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Controlled cast iron from our own modern foundry ... heavy bronze wedges ... generous bronze wedge seats ... seat facings of malleable extruded bronze, pneumatically impacted and work-hardened in machined dovetail grooves of disc and frame ... these are typical of the workmanship which gives Rodney Hunt Sluice Gates their unique value and true economy for generations to come!

Specify Rodney Hunt Sluice Gates for standard sizes of 6 x 6 to 120 x 120 inches clear opening, rectangular or round. Over 2000 combinations of standard Rodney Hunt Sluice Gates, including many of unusual dimensions, are available with precision-built hoists.

Write us for the name and address of the Rodney Hunt representative in your area. He'll be glad to give you quotation information and engineering assistance.

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Cincinnati	Nashville	Seattle
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was established, the procedure has been to place the mortar up the slope to build succeeding layers. Thus, if the pipe rows were numbered, from the head end, 1, 2, 3, 4, 5, 6, and so on, first pumping would be at row 3, then 2 then 1, (to establish the sloped surface) then 4, 3, 2, 1, then 5, 4, 3, 2 in that order for the full 1,100 ft.

Since the mortar will set up into firm concrete in roughly 18 hours, the matter of moving forward with pipe connections must be carefully controlled, so that the face of the mortar is always active, and no joints or seams develop.

Conventional concreting methods will be used for the sidewalls and housing for the gate and pumping facilities at the river end.

• **Dewatering**—Since the dock will remain dewatered for a period of several years, during construction of the carrier, initial pumping installations will later be supplemented by additional capacit . In permanent operation, the dock should be dewatered in about 8 hours. But initial dewatering will be carefully controlled and will take about 8 days. Piezometers will be placed in test wells to measure the effect of the expected hydrostatic pressure. If any measurements show a pressure corresponding to a water level of El 95, dewatering will be stopped and deep wells installed around the perimeter to relieve the pressure.

Once initially dewatered, the top of the slab will be sandblasted, and a layer of leveling concrete placed on it since variations of plus or minus 6 in. are expected as result of the underwater operation.

The working gallery for shipbuilders will be simply an open platform atop the sheetpile cells, backed by a concrete wall, which will be topped with a railing composed of six pipelines carrying various services to the dock. The edge of this platform will project over the scallops of the underlying cells to give a straight edge to the top of the dock.

Heavy shipyard cranes will operate on tracks to be laid atop the compacted material in the cells that form the sides of the dock.

The caisson-type steel gate will be assembled in place over the sill. Basically, the gate is a hollow vessel, 49½ ft high, 159 ft wide, 20 ft thick, equipped with its own pumping system for dewatering to restore buoyancy when the dock is to be opened.

John W. Keig is plant engineer for New York Shipbuilding Corp.; John C. King chief engineer for Prepakt, with Alex Hawkins as project superintendent. George Vaccaro is project engineer for Parsons, Brinckerhoff, Hall & MacDonald and John O. Bickel is partner in charge for the same firm.

Clyde equipped barge handles 800 T.P.H. for Ohio's Raymond City Coal

Free digging of 700 to 800 tons per hour . . . that's the average coal handling performance of Raymond City Coal and Transportation Corp.'s Clyde equipped barge derrick.

Coal from West Virginia is shipped by barge to their modern and efficient plant at North Bend, Ohio. Here, it is loaded directly into a barge mounted hopper, then by conveyor belt to stock piles, railroad cars or to storage bins for truck loading.

CLYDE EQUIPPED ALL THE WAY

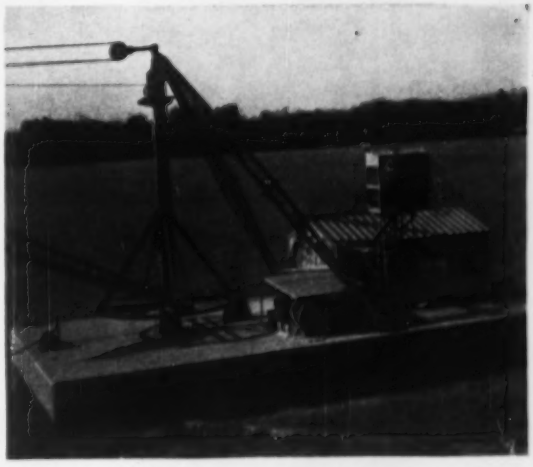
Clyde builds a "working team" for every kind of material handling operation.

Raymond City Coal and Transportation Corp.'s coal handling barge is equipped with a heavy duty, Clyde steel derrick operated by powerful 25,000 lb. line pull hoist and independent swinger.

Two Clyde barge movers position the coal barges during unloading operations. Two Clyde capstans, one at each end of the barge, are used for mooring lines.

Greater capacity, lower handling costs and an operation ". . . free from trouble since its installation . . ." expresses Raymond City's approval of this fast working, Clyde unit.

Your material handling methods can also be improved by using Clyde equipment. *Why not get all the facts on Clyde.*



Air operated Clyde hoist has control lever bank elevated to permit unobstructed vision for operator, Anti-friction bearings on drums and shafts of hoisting equipment and on derrick sheaves, assure efficient and dependable service with less maintenance.

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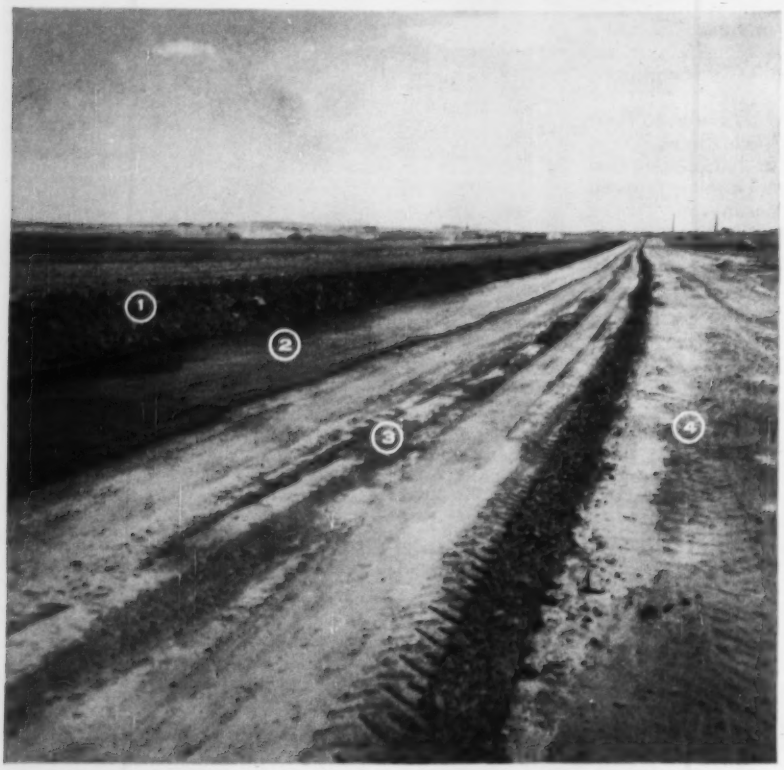

Method used: (1) A 1-ft blanket of earth lies atop asphalt base as (2) a new strip of membrane is sprayed on at the same time graders level the next adjoining strip (3) preparing it for the asphalt cover. (4) The next area before any grading.

Asphaltic

Wide strips of asphalt membrane make 100-acre lake bottom waterproof for Army's Chemical Corps. Contractor uses unique methods to solve construction problem of placing the impervious floor . . .

The Corps of Engineers has put a leakproof bottom of asphalt membrane in a 100-acre lake at the Rocky Mountain Arsenal near Denver, Colo., in what is believed to be the largest installation of its kind.

The arsenal produces a liquid waste product which, despite treatment, contains residual matter. The Chemical Corps, which operates the arsenal, considered it more desirable to have the liquid waste reduced by evaporation than by filtration, and asked the Army Engineers to make the lake a leakproof pan.

To carry out this assignment, the Engineers investigated a number of methods. Consideration was given to Portland cement, asphalt, asphalt planks, impervious compacted earth, grouting with chemicals, and the asphaltic membrane.

Partly because of economic reasons, the choice was the asphaltic membrane, the use of which was pioneered by the Bureau of Reclamation to make irrigation ditches impervious (ENR Sept. 13, p. 35).

The asphalt used is the last residue of the distillation of normal asphalt-base petroleum. A catalyst blown into it produces a chemical change that results in a very tough, rubbery membrane, and one that adapts itself to contours of the surface to which it is applied.

The contract, on a low bid of $497,000, was awarded the Long Construction Co., Billings, Mont. The price includes also the placement of vitrified clay pipelines with chemically resistant sealed joints to carry waste from the arsenal to the reservoir. The contract, started in June, is now almost complete. The technique of placing the asphalt, which Army Engineers regard as ingenious and effective, was worked out by the contractor.

The lake involved is roughly oval, approximately 2,900 ft across at one end and 1,600 ft across at the other. The lake is about 10 ft deep over most of its area. Artificially made, it is located in a natural depression made into a lake by placing a dike at one end.

• **Placing of membrane**—First, a wide strip was excavated to grade and then compacted with a roller to give a smooth

Membrane Is Used to Leakproof a Lake

surface. Preheated asphalt was brought to the site in insulated tanker trucks and then transferred to a distributor which was modified especially for this job. Modification consisted of placing the spray bar as an outrigger to one side rather than having it behind the distributor in the conventional manner.

Asphalt was then sprayed in a strip about 1,000 ft long and 12 ft wide, at a rate of 1.35 to 1.50 gal per sq yd.

Because application of the hot material at the total specified rate would have caused it to run, the membrane was built up in three successive applications. The angle of the spray bar was changed each time to give an even distribution. The result was a membrane that under close inspection was found to be free of holidays and remarkably uniform.

The next step was the placing of an earth blanket 1 ft thick atop the completed membrane. This was accomplished by elevating graders working in tandem to hoist earth across the working area to the far side of the completed membrane. They laid the blanket in successive strips about 1 ft wide until only 1 ft of the new membrane was left exposed. A light blade was then sent in to smooth out the earth blanket.

The work of the elevating graders accomplished the dual purpose of putting the blanket atop the membrane and preparing another strip for a new 12-ft strip of the membrane.

As a preliminary to placement of the new strip, a portable compressor unit traveled the edge of the strip to blow away dirt spilled on the exposed edge of the membrane during the placement of the earth blanket. The clean surface assured a tight bond between successive strips of the membrane.

Overlap between the various strips varied from 4 to 6 in.

The lake is so designed that no surrounding surface area drains into it. This is accomplished in part by the dike and drainage ditches around the lake.

Engineers of the Bureau of Reclamation at Denver cooperated with the Army Engineers, with assistance given by L. M. Ellsperman of the Bureau's chief engineer's office. The work was assigned to the Omaha District of the Corps of Engineers of which Col. Thomas J. Hayes is district engineer, J. O. Ackerman, chief of engineering, Henry A. Sikso, chief of foundations and materials, and Lyman S. Bray, a member of the foundations and materials branch. Area chief for the Corps of Engineers in the Denver area is Lieut. Col. Herschel E. Linn.

Tandem graders level a strip before applying the asphalt. Earth removed is dumped atop membrane to form the earth blanket which is then leveled with a light blade.

Distributor truck with spray bar in outrigger position sprays preheated asphalt over the graded surface. To avoid running, the asphalt was placed in three layers.

After earth layer is placed over the membrane covering, a portable air compressor is used to blow away dirt on the edge to assure a tight bond with the next strip.

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For Sales and Service see "Radio Communication Equipment" in your Yellow Pages. Or, write: *General Electric Company Communications Equipment, Section X22116-22, Electronics Park, Syracuse, N. Y. In Canada, write: C.G.E. Electronics, 181 Lansdowne Avenue, Toronto.*

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New Products

Steel Doors for Homes Come With Thresholds, Frames

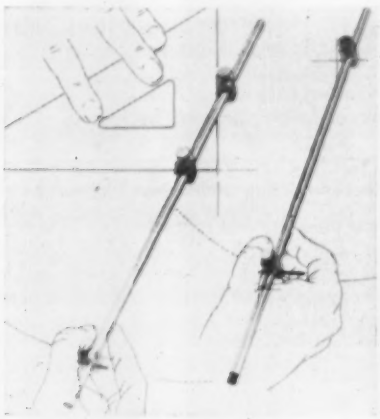
All-steel exterior doors for homes are now being marketed by Steelcraft. Besides the door itself, the complete unit includes frame, threshold and weatherstripping.

The door is insulated with 2½-lb density mineral wool. Treated to prevent rust, it comes with a baked-enamel prime coat. Finish painting is also available in a variety of colors, textures and patterns.

The frame is made of 16-ga steel and comes with factory-applied bronze weatherstripping. The threshold, extruded aluminum, has a built-in vinyl plastic seal. Steelcraft Mfg. Co., 9017 Blue Ash Rd., Rossmoyne, Ohio.

Ripple Pattern Enhances Sheet Copper Appearance

Chase Brass & Copper announces that sheet copper is now available in a new stock pattern called Ripple. The decorative highlights and shadow patterns produced by the deep ripple or wave design is intended to enhance the appearance of such products as fireplace hoods, range canopies, gutters and cornices. The material comes in 16-oz weight, in 36-in. and 96-in. sheets. Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 20, Conn.



Ellipses and Circles Drawn Using Simple Beam Compass

A simple "beam" compass can be used to draw circles up to 24 in. in diameter and, used as an ellipsograph, to draw ellipses with radii from ⅛ to 12 in., and to any degree from 10 to 65 deg, according to the manufacturer.

Two aluminum blocks, one with a pivot point and the other with a lead point, move along an aluminum beam and lock into place by thumbscrews to draw circles. A third block and different points are used to draw the ellipses.

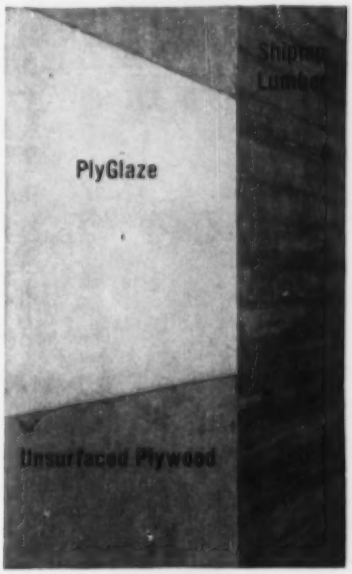
The Aero Beam Compass and Ellipsograph, as it is called, sells for $3.95. Aero Engineering Sales Co., P. O. Box 85, Azusa, Calif.

Light Centrifugal Pump

A 1-in. centrifugal pump weighing only 27 lb is capable of lifting water by suction up to 25 ft. It is called the Pick-Up Pumper. The manufacturer states that it is ideal for such jobs as watering lawns and gardens, washing equipment, transferring liquids, etc., being particularly useful where water pressure is low. A self-priming centrifugal pump type, it is powered by a 1½ to 2-hp gasoline engine. Construction Machinery Co., Waterloo, Iowa.

Vernier Target Added To Leveling Rod Line

A leveling rod featuring a vernier on the target reading to 1/1000 ft has been added to the Berger line. The 3-section rod, which is 10 ft long, has a target with a tension gib and locking screw. It can also be used in two sections for heights up to 6.7 ft. Retail price is $17.75, fob factory. C. L. Berger & Sons, Inc., 37 William St., Boston, Mass.



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Read "finest" both ways: PlyGlaze *itself* has the finest, smoothest surface of any form material; PlyGlaze-formed *concrete* surfaces are the finest—smooth, even-textured, with no trace of grain pattern. Savings on finishing costs alone frequently offset slightly higher cost of this premium material. See Sweet's File or use coupon for more information.

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Hard, glossy-smooth wear resistant fused resin-fiber surfaces.
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Darex Diary

#13 of a series

by Henry L. Kennedy
Member, American Concrete Institute
Manager, Construction Products
Dewey and Almy Chemical Company

* Protective coating of concrete highways
* Curing air-entrained concrete

In these columns I have often referred to the excellent cement and concrete research laboratories Dewey and Almy maintains in Cambridge. There is another laboratory right at our New England doorstep which helps prove the performance of products made by the Construction Specialties Division. I am speaking, of course, of the New England climate.

Few areas of the country are more variable in weather. And under these conditions, our DARACONE water repellent, developed as a protective coating for all types of exterior masonry, has achieved a remarkable performance record.

DARACONE'S popularity, of course, extends to many parts of the nation. However, I can think of no more dramatic proof of its value than is seen in the protection it provides for weather-buffeted New England's highways, bridges and buildings.

Vermont, for example, has used DARACONE on some 30 bridges in the Barre-Montpelier area alone, to arrest spalling. In New Hampshire, this specially-developed silicone has been successfully used on highway bridges, bridge decks, sidewalks and bridge structures, both for preventive maintenance and to arrest further deterioration of structures. Connecticut highway officials are enthusiastic about DARACONE for preventive maintenance, while in Massachusetts, DARACONE is used on all Toll Road bridges.

In a great number of the instances mentioned above, DARACONE has been at work for more than three years—a considerable period when you reckon with the extremes of weather encountered in this corner of the country.

DARACONE coverage on these jobs is between 80 and 180 square feet per gallon. Most jobs have been one-coat applications.

We have printed an interesting booklet on DARACONE. If you'd like a copy, just drop me a note, and ask for Booklet No. 3B1.

* * * * * * * * * * * *

Air entrainment in concrete, as is universally known, provides improved durability and resistance to freezing and thawing. However, air entrainment itself is not an automatic solution to all concrete problems. For example, the temperature at which the concrete is placed affects the final result. Even more important is the interval between finishing and the time the concrete is salted for de-icing purposes. Concrete must be allowed to mature. The concrete slab must cure and dry out to the extent that excess water is no longer available as freezable water.

To simulate field exposure conditions, laboratory freezing and thawing tests were conducted with a 10% $CaCl_2$ solution in our Cement and Concrete Research Laboratories. A number of air-entrained concrete specimens were cured moist for 28 days and immediately subjected to 24-hour cycles of freezing and thawing. Companion specimens were cured moist for 14 days, and then dried out for 14 days before being subjected to the freezing and thawing cycles. At 40 cycles, the moist-cured showed 17% loss of weight, and the properly-cured but dried-out specimens only 2% loss. At 60 cycles, the moist-cured showed 31% loss, while the dried-out showed but 3% loss.

Field results substantiate these laboratory tests. On these jobs where air-entrained concrete showed a decided lack of durability, freezing weather had set in within six weeks of the time the concrete was finished, and salts had been applied shortly afterwards. When concrete is placed after October, a good rule is to keep salts off your highway for the first year.

DEWEY AND ALMY
CHEMICAL COMPANY
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Obituaries

William H. McAlpine, 82, retired special assistant to the Chief of Army Engineers, died Nov. 1, in Washington, D. C. Mr. McAlpine had retired from the Corps of Engineers regular staff in 1952 after a half century of service. He was recognized as the dean of the Army's civil engineers.

Maj. Gen. E. C. Itschner, Chief of Engineers, said in tribute to Mr. McAlpine, "Substantially all important federal navigation projects planned or constructed in this 20th century have benefitted from his help and guidance."

Although most of his efforts had been directed to the Corps' civil works program, he attended conferences of American and British representatives to consider the feasibility of constructing artificial harbors for landing of troops on the Normandy beaches. Mr. McAlpine served as consultant on the design and engineering problems involved in constructing the third set of locks for the Panama Canal, the MacArthur Lock on the St. Marys Falls Canal, Sault Ste. Marie, and the ore locks at Escanaba, Mich. He was also chief engineer on the extensive navigation developments on the Ohio and Upper Mississippi River.

He was chief of the Engineering Division, Civil Works, from 1934 to 1942 before becoming special assistant to the Chief of Engineers.

George W. Saathoff, 72, a consulting engineer died in Sea Girt, N. J., Nov. 10. A specialist in power plant engineering, Mr. Saathoff was born in Litchfield, Ill., and was graduated in 1906 from the University of Illinois. After graduation, he joined the Cities Service Co., where he remained for 35 years. He was a vice-president and director of Electric Advisors, Inc., a subsidiary of Cities Service, until 1946, when he started his own consulting engineering business.

H. Raymond Weeks, 55, president and treasurer of H. Raymond Weeks, Inc., architects and engineers, of Durham, N. C., died Oct. 27. A graduate of the Georgia Institute of Technology, he was associated for a number of years with an engineering firm in Atlanta. He was a native of Palmyra, Mo.

Edward J. Ruxton, 74, treasurer and general manager of the Adams & Ruxton Construction Co., of Springfield, Mass., died Nov. 6 at Springfield. He was a member of the State Board of Standards and Appeals in the Department of Public Safety and had been a member of the Springfield city council.

Reclamation's E. R. Crocker Retires After Long Service

E. R. Crocker, project manager of the U. S. Bureau of Reclamation's Santa Barbara Area Projects, retired Nov. 2 to bring to a close a government service career that began in 1909.

In 1927 he was appointed a member of the engineering staff of the bureau's chief engineer's office in Denver. In 1933 he was promoted to assistant head of the canals division and in this capacity he contributed to the design and construction of thousands of miles of irrigation canals and hydraulic structures. Outstanding projects on which Crocker worked include the All American Canal in Southern California, the Columbia Basin Project canals in Washington, the Friant-Kern and Delta-Mendota canals in California's Central Valley and the Transcontinental Divide Diversion, which implements the Colorado-Big Thompson Project in Colorado.

Crocker became project engineer on the Cachuma Project in the Santa Barbara Area Projects section in 1948. He directed the construction of Cachuma Dam, the Tecolote Tunnel, the South Coast conduits and the several reservoirs for the water supply facilities for Santa Barbara and the agricultural lands in Santa Barbara County.

Crocker, in recognition of his contributions to the advancement of irrigation in the West, received the Department of Interior's distinguished service award in 1954.

(*Men and Jobs continued on page 46*)

Europeans Gather U. S. Know-How

Five European engineers, in this country to study foundation construction techniques, recently discussed deep pier foundations and observed river bank construction when they visited the Dravo Corporation plant in Pittsburgh. The visitors are on a month-long tour sponsored by the International Cooperation Administration and are traveling to New York, Pittsburgh, Cincinnati and Vicksburg. From left, Phillippe P. F. Lesourd, Paris Industrial Electric Society; Heinrich R. Hochstrasser, Saarbergwerke, Saarbrucken; W. A. Robinson, assistant chief engineer, Dravo Contracting Div.; Kurt Weise, Reconstruction Department of the Saar Government; H. H. Sturdy and B. E. Rhoades, general manager and chief engineer, Dravo Contracting Div.; Willi Lembert, Nikolaus Lembert Construction Co., Fechingen; Maurice C. Auberger, Societe Provencal du Pieu Express "Les Pieux Fronte."

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From the time it was first constructed, this section of the New Hampshire Turnpike—near the principal toll station at Hampton Plaza—was subjected to terrific erosion, partly from freezing and thawing, partly from mechanical wear aggravated by frequent application of de-icing salts.

Soon it became apparent that the surface would have to be *sealed* to prevent further deterioration. Toll Road Maintenance men chose Dewey and Almy's DARACONE for this vital job.

Applied swiftly and economically to the concrete roadway by truck-borne spray bar—an area 900' long by 12' wide could be covered in four minutes—DARACONE met the challenge. After 3 years, state highway engineers rate DARACONE at 90 to 95% efficiency!

DARACONE's silicone-coating protection has been used with equally fine results in all types of masonry structures. Each project reaffirms this statement: DARACONE *fulfills silicone's promise!*

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"Thompson's Water Seal eliminated the problem of stains in our tilt-up concrete walls. Now panels are easily removed from the surface slab and painting proceeds speedily."
ASSOCIATED CONSTRUCTION AND ENGINEERING COMPANY OF CALIFORNIA, San Francisco, Calif.

* **Is there one curing, separating and form-sealing method that easily produces hard, dust-free surfaces?**
"Of all the chemicals we tested in our tilt-up work, Thompson's Water Seal proved the cheapest insurance against costly grief and painting troubles."
BAYCITIES CONSTRUCTION CO., Oakland, Calif.

* **Is it possible to prevent all moisture damage in concrete under pressure or capillary action, regardless of weather?**
"As waterproofing specialists in heavy construction work, we use Thompson's Water Seal on all concrete moisture problems with constant success and at a great saving."
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Men and Jobs Briefs . . .

• **Associations**—The American Institute of Steel Construction elects as president **N. P. Hayes,** head of the Carolina Steel and Iron Company, Greensboro, N. C. . . . **John H. Dahlman** of the Dahlman Construction Co., Milwaukee, Wis., is elected president of the General Contractors Association of Milwaukee.

Albert L. Love, Jr., Texas paving engineer, is appointed district engineer for New Mexico of The Asphalt Institute and **Charles A. McKeogh** of San Antonio, Tex. is named to succeed **William H. Rhodes,** retiring district engineer for New Orleans.

• **Military**—The Air Force promotes **Col. Joseph E. Gill,** Facilities Support, Office of the Assistant Chief of Staff Installations, Hqs USAF and **Col. Christian F. Dreyer,** Director of Installations, Strategic Air Command to the grade of Brig. General.

• **Careers**—Widely experienced in wood research, **William D. Eisenhauer** joins the technical staff at the laboratory of Timber Engineering Company, research affiliate of National Lumber Manufacturers Association . . . **L. C. Cheek, Jr.,** of Chapel Hill, N. C., is appointed city engineer at Charlotte, N. C. He succeeds **Lloyd G. Richey,** who resigned to join a Charlotte highway construction firm.

• **Business**—The Kreisler-Borg Construction Company, White Plains, N. Y., promotes two of its members: **Thomas J. Grasso,** vice president-general superintendent, has been elevated to the board of directors, and **Samuel C. Florman** is raised to vice president-project manager and made a member of the board of directors . . . **Empire Soils Investigations, Inc.** moves their office and laboratory to Ithaca, N. Y. Five members of the consulting engineering firm of H. E. Bovay, Jr., are promoted to associate members. They are **S. J. Bell, R. O. Grimes, J. R. Maxwell, Guy Furgiuele** and **S. L. Newman.**

• **Honors**—The Professional Engineers of Oregon honor **Eugene Caldwell,** vice president and general manager of Hyster Co. Portland, Ore., as the Engineer of the Year of Oregon for 1956. The citation is based on community service activities . . . **Ralph DeSimone** head of a construction consulting firm under his own name, is made president of the Heights Colleges Alumni Association of New York University.

HOW 8,000 lbs. was safely hoisted 75 feet in THREE minutes flat!

Schumacher used 110 foot boom and 15 foot jib on his 25 ton

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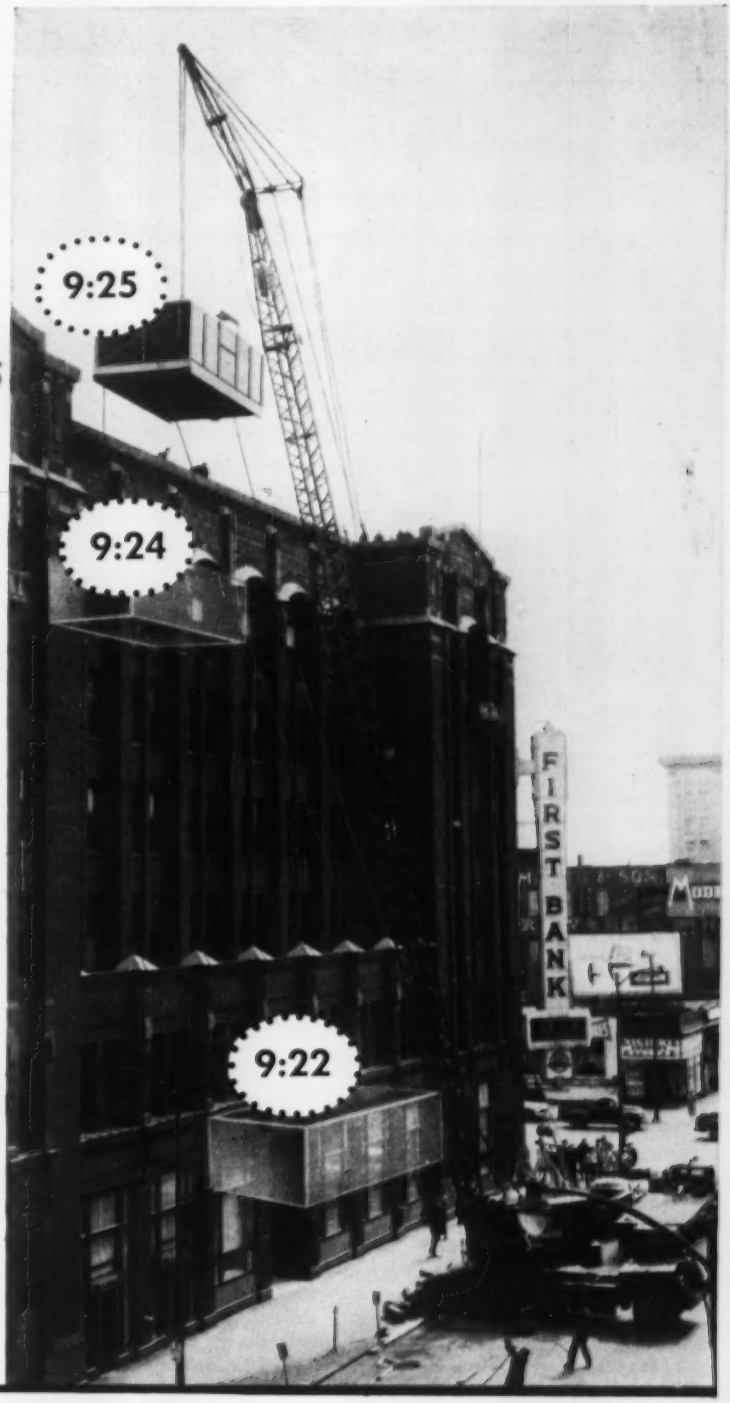

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264

Shopping Abroad for Engineers

A plan to quickly and immediately alleviate the U. S. shortage of engineers suggests recruiting foreign engineers

An idea for partial solution of the engineer shortage in the U.S. comes from an unexpected source. International shopping for engineers is the idea; Cesar Jayme, assistant manager of the Northwest Orient Airlines office in Manila, is the source.

In brief, what is suggested is that American companies recruit engineers from those Asiatic and European countries not heavily engaged in industry and, therefore, having no shortage of engineers. This would provide a temporary, partial solution of the shortage (ENR Nov. 8, p. 28) until U.S. supply catches up with demand.

To particularize this idea, the Republic of the Philippines is offered as a case in point. Here is a country that is predominately agricultural. Her industries are growing, but at a modest pace.

Reconstruction projects are plentiful creating an atmosphere that entices Philippine college men into engineering. But the field is said to be so hemmed in by a handful of well-known engineering firms that graduates in many cases have to resign themselves to jobs alien to their training.

Can these "surplus" engineers be utilized to help alleviate U.S. shortage?

• **Precedent**—Previously, Jayme was instrumental in having NWA launch an exchange program in 1949 to meet the much-publicized medical-man stortage in the U.S. The venture had been primarily promoted to increase passage to the U.S. through NWA. But the idea snowballed into an atmosphere of national interest that has resulted in 300 to 400 doctors and nurses coming to the U.S. annually to receive advanced and specialized training.

Employing the same approach, Jayme recently began working on an exchange program for engineers.

To feel out possibilities, the NWA ran an advertisement in a Manila daily last April 16 calling for graduate engineers to work in the U.S. A few days later, a total of 850 applications had been received, representing engineers in these fields: civil, mechanical, electrical, chemical, mining, architectural, radio and geodetic.

NWA personnel immediately went to work. An examination of various Philippine universities and colleges led them to conclude that the Filipino engineer approaches the American in training. Next, to bolster its project, the NWA secured an administrative order from the President of the Philippines creating a committee to take charge of the Filipino participation in the exchange program. This committee was authorized to endorse for placement, qualified applicants for the consideration of the appropriate U.S. agency administering the program.

NWA then began feeling out American companies on the possible placement of Filipino engineers.

• **In favor**—Many of the companies contacted expressed interest. Encouraging replies came from Western Electric, Ford and Wisconsin Employment Service, among others. And the Michigan State Highway Department has already requested approval from the State Department to hire 10 engineers; while Electric Auto-Lite Company wants six for its Niagara Falls plant.

To bring together the right engineer for the right company, the best plan seems to be one in which the interested companies would send recruiting teams to Manila to pick their men. Selected applicants could then be turned over to NWA which will handle their processing and documentation from beginning to end. An alternative plan would be to have brochures on typical Filipino engineers; or perhaps an educational and personal history outline of each applicant.

The Filipino Engineer

An examination of the curricula of various Philippine schools by NWA came up with the following:

Engineering is a five-year course.

Curriculum compares favorably with that of U. S. universities.

All textbooks are authored by Americans; instruction is in English.

Methods and courses are quite standardized.

Laboratory work, at the University of the Philippines, for example, involves materials testing, soil mechanics, sanitary engineering and fluid mechanics (in a lab designed at the Iowa Institute of Hydraulic Research and equipped for model studies of hydraulic structures).

• **Objections**—By far the biggest problem to overcome is the reluctance of American companies to hire foreign engineers on a temporary basis; and a U.S. State Department directive prohibits permanent employment for foreign technical men. The State Department's action appears to be premised principally on the fear that foreign technical men would not only be competing with American citizens, but may even deprive some of employment.

Other companies—such as Boeing Aircraft which needs hundreds of engineers—point out that they cannot use aliens because of security reasons. However Curtiss-Wright—which employs European engineers—solved this by constructing separate buildings to keep its foreign engineers separated from classified material.

Also, American firms in the Philippines are believed to oppose the NWA project, because of the fear that the wages of their Filipino engineer employees would have to rise to conform with the higher salary scale in the U.S.

One final argument is that the Philippines, for instance, graduates only some 1,500 engineers annually and this number is negligible. The answer given to this is that the Philippines is only one country of many from which to draw engineers. And, utilizing all possible sources, the number of engineers that can be had should more than meet the demand.

Argentina to Resume Work on Irrigation Project

The Argentine government has allocated 30 million pesos (about $1.7 million dollars at the official exchange rate of 18 to 1) for construction of a dam for irrigation purposes at Las Maderas in the Province of Jujuy. This project, which was begun many years ago, has been in an abandoned state since 1935.

The Las Maderas dam will supplement the dam at La Cienaga, about three miles to the northwest of the new site. The new dam is expected to add some 4,500 hectares of irrigated land in this area. This will bring the total area of irrigation here to about 13,000 hectares.

The project involves construction of a dam 164 ft high across the throat of the Las Maderas gorge. The reservoir that is created will be filled by the Las Maderas stream and by waters from the Perico and Grande Rivers. Water from these two rivers will be brought in by a canal system.

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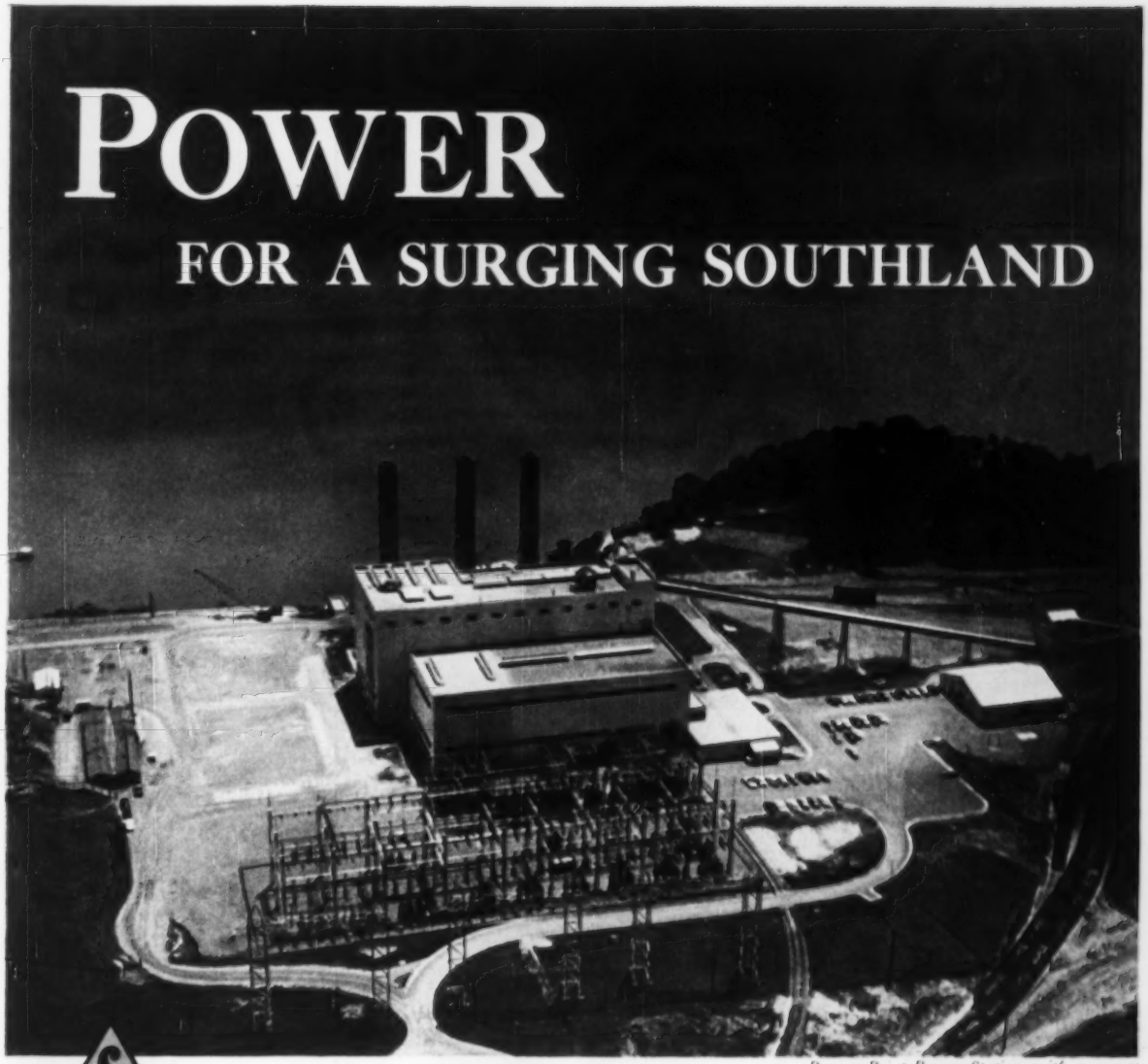

Possum Point Power Station with a name plate capacity of 220,000 kw is located on the Potomac River near Quantico, Virginia

The third generating unit of the Possum Point Station of the Virginia Electric and Power Company – designed and built by Stone & Webster Engineering Corporation – went on the line in mid-1955, with a name plate rating of 100,000 kilowatts.

The Engineering Corporation is presently installing four 150,000 kilowatt units in three other generating stations being designed, constructed or extended for this client for commercial operation in 1957, 1958 and 1959.

These additional power facilities are examples of the forward looking steps being taken by Virginia Electric and Power Company to satisfy the rapidly expanding power requirements of the VEPCO system.

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Diesel for Mining?

Equipment shown above includes: Eimco tractor-loader; LeTourneau-Westinghouse Tournatractor and Rear Dump; Lima Paymaster shovel; Gardner-Denver air compressors. Write for list of over 1000 GM Detroit Diesel power applications.

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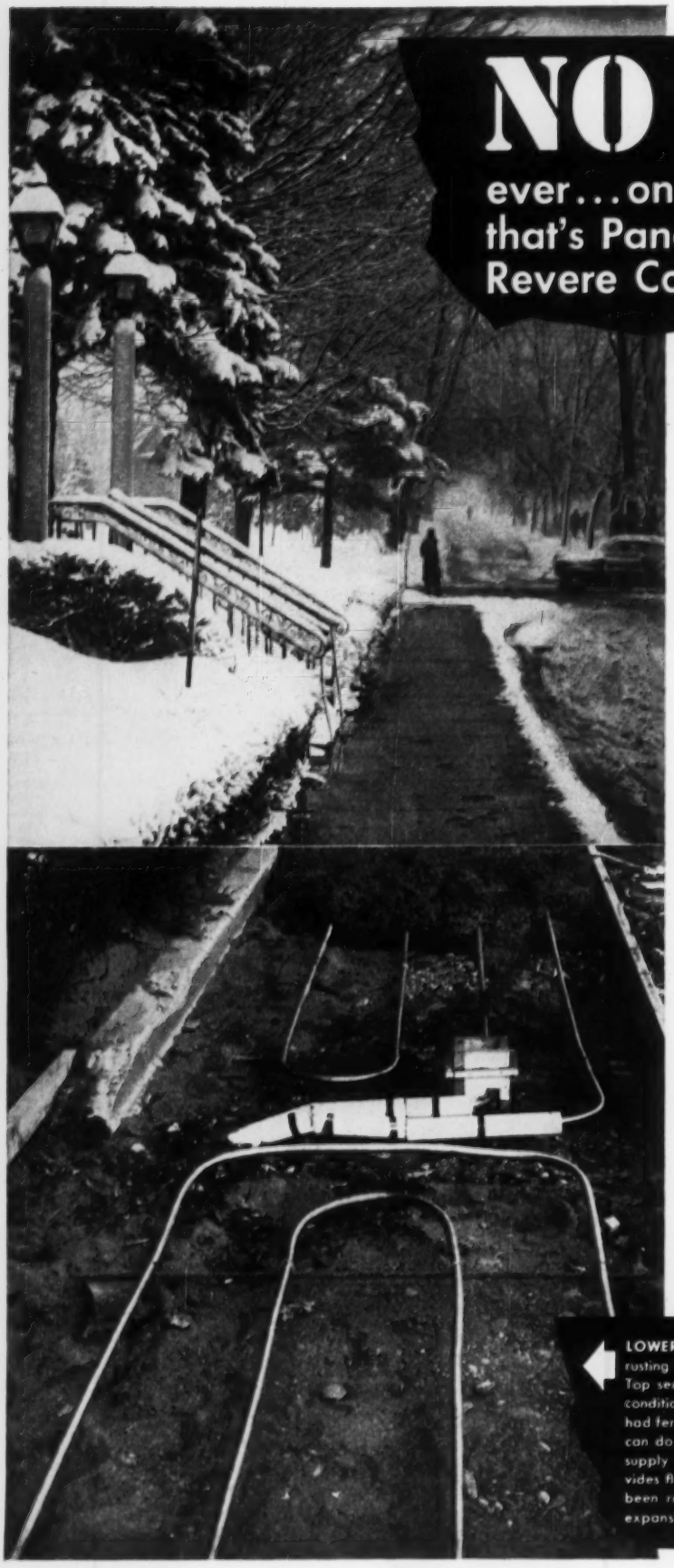

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ever... on the sidewalk that's Panel Heated with Revere Copper Water Tube

Huge strides are being made by this method of snow removal. No wonder, shoveling and accidents due to snowy walks are eliminated . . . while the time and labor saved pays for the installation in short order.

That's why you'll find snow melting panels also being used on driveways, loading platforms, entrance aprons, service stations, pedestrian ramps at railroad stations, airports and similar spots. One application which bears special mention is the use of coils in garages. They quickly melt the snow on cars, keep floors dry as well as keep the repair shop floors warm so mechanics can lie right on the bare concrete in comfort.

And when you make the panels of Revere Copper Water Tube you have these added advantages: Copper can be bent to conform to the terrain. Bendability permits use of sinuous coils, while the 60-foot lengths of tube mean fewer fittings which, when joined by solder means joints that stay tight. Copper tube cannot rust, rot or deteriorate. That's why, on the inside, full flow and low frictional resistance are maintained throughout its long life. While external moisture will not harm it from the outside.

Keep ahead of the parade. Recommend Panel Heating for snow removal. Revere's Technical Advisory Service will be glad to help you in the proper application of Revere Copper Tube in working up your plans.

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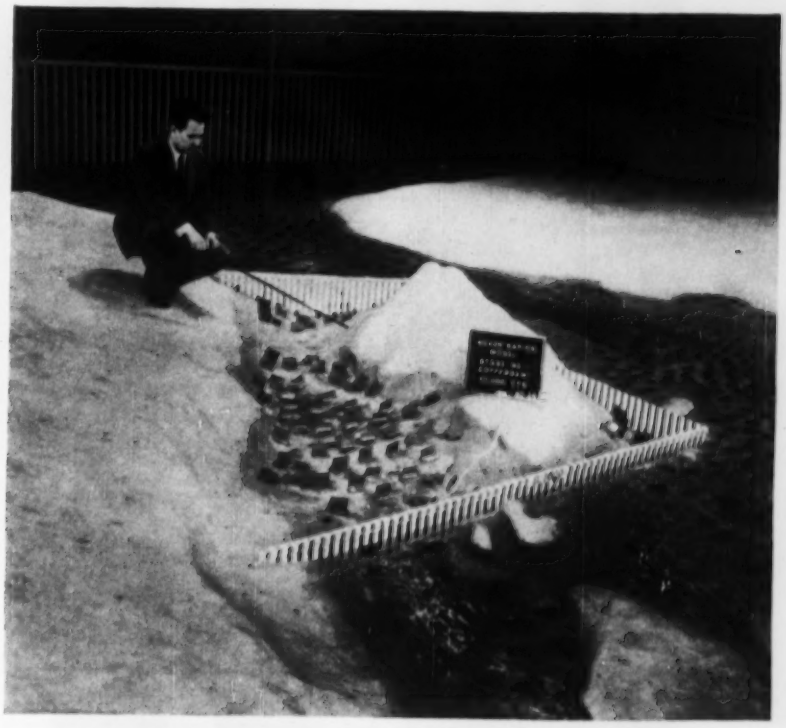
LOWER SECTION OF PHOTOGRAPH shows how non-rusting Revere Copper Tube was imbedded in concrete slab. Top section of photo shows same walk under actual snow conditions. Note bends. Think of all the joints necessary had ferrous pipe been used. And think, too, of what seepage can do to rustable materials. Note insulation used on each supply and return line to the coils from the mains. This provides flexibility in the take-offs from the mains, which have been run below the slab, to allow for movement due to expansion and contraction.



Hydraulic research at Washington State College is headed by E. Roy Tinney (above). Flow studies and tests on hydraulic structures such as the cofferdam for Noxon Rapids (right) are all a part of his increased business as . . .

Western Lab Checks Hydro Designs

An important center for hydraulic model testing has emerged in the Pacific Northwest in just two years. It's located in Pullman, Wash., at Washington State College (5,700 enrollment) far removed from important metropolitan areas. More large-scale model tests have been handled there recently than in any other non-federal lab.

Reason for the development is relatively simple. There's a big boom in non-federal hydroelectric projects in the Pacific Northwest and there is no other place in the area where designers and contractors can check plans and construction procedures. Previously this type of work had been farmed out to such relatively far removed places like Worcester Polytechnic Institute or Minnesota's St. Anthony Falls Laboratory.

The hydraulic research laboratory is officially a function of the Division of Industrial Research of the Washington State Institute of Technology, a major branch of Washington State College. The Division, under its director, R. L. Albrook, is a branch of the Institute of equal and parallel standing to the College of Engineering.

The Division of Industrial Research carries on studies under contract on many things important to the economy of the Pacific Northwest. These include air pollution, wood technology, mining, soils and highway investigations, sewage treatment and school design.

SCALE-MODEL TEST checks functioning of Noxon Rapids spillway bucket. This test followed the cofferdam study (top photo) by 10 months.

Since the hydraulic model testing program began, scale models of complete projects have been undertaken for these important dams: Noxon Rapids, Brownlee, Pleasant Valley, and Rocky Reach. And studies have been undertaken on parts of projects such as the spillway and penstock gates for Priest Rapids.

• **Young leadership**—Heading up the hydraulic research is E. Roy Tinney, 31, a brilliant hydraulician who not too

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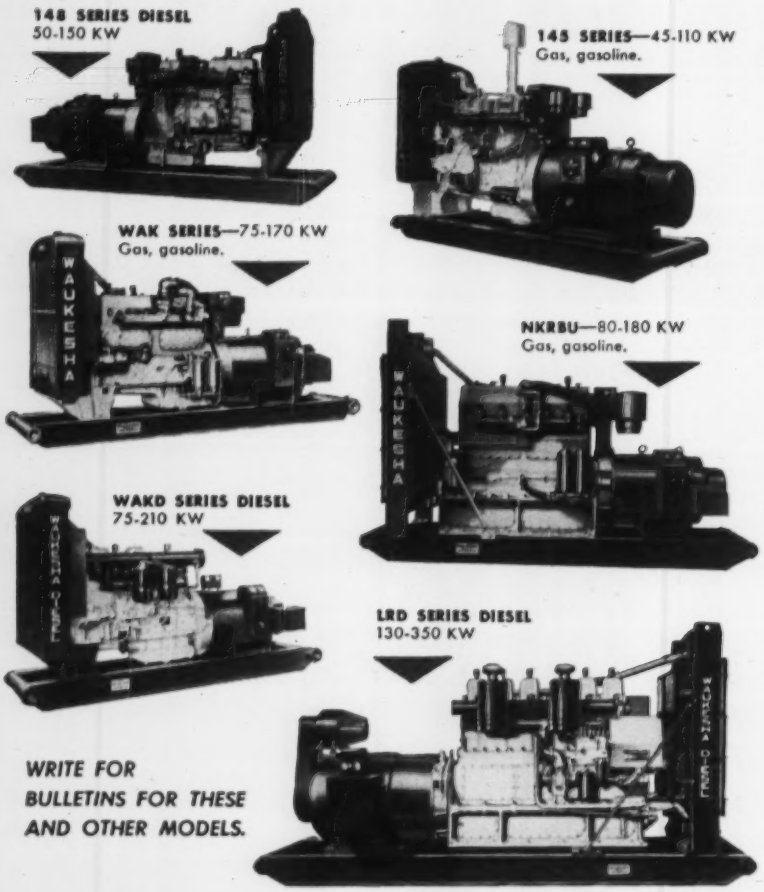

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325

WAUKESHA MOTOR COMPANY • WAUKESHA, WISCONSIN RAILWAY DIVISION

long ago was a student and staff member at Minnesota's St. Anthony Falls Lab. A native of Canada, Tinney earned a bachelor's degree from the University of British Columbia and a master's degree in civil engineering from the University of Washington. This was followed by a Ph.D. from the University of Minnesota.

Work has come so rapidly to the laboratory that often a model is built out-of-doors with a building cover added later. This was the case with the Pleasant Valley model and is currently the situation with the Rocky Reach model. Magnitude of the problem can be seen in the fact that the Rocky Reach model built on a scale of 1 to 75 is 110 ft long and 30 ft wide.

• **Model built in stages**—Model testing is a time-consuming operation. On the models built at Pullman, construction has taken from 2½ to 3 months. Then the test program might take anywhere from two months to two years. Reason is that many phases of the hydraulics of a project are considered. For example, on the Noxon Rapids project a 1 to 50 scale model of the river was built first. Testing started out with the proposed cofferdam arrangement. Then a model of the dam was built on the river model with hydraulic features tested as the model construction advanced. Included were different spillway and gate structure arrangements as well as flow through the powerhouse.

Selection of scale is an important early function in the testing program. The scale must be such that hydraulic similitude will obtain to correctly reproduce the phenomenon to be considered. Other factors that have to do with scale selection are size of the laboratory, pump capacity and total cost of the model.

The comprehensive models at Washington State have ranged from a 1 to 50 scale for Noxon Rapids and Pleasant Valley through a 1 to 70 scale for Brownlee to a 1 to 75 scale for Rocky Reach. On some riverbed models in which the general characteristics of flow for a long reach of the river is to be investigated scales may range up to 1 to 600. Some of these large-scale models are distorted so that depth scale is exaggerated.

• **Blue chip clients**—Customers of the laboratory read like a blue book of hydro project designers. They include Ebasco, Harza, International Engineering, and Stone & Webster (through Chelan County PUD). And industrial clients are increasing. For example, Pacific Coast Engineering Co. of Alameda, Calif., is sponsoring the study on fixed-

wheel penstock gates for Priest Rapids Dam. Total value of model work conducted at Pullman the last two years is in the neighborhood of $200,000. Full-time staff include five engineers and 25 other technicians.

Tinney looks for the model work to continue for some time. He calls it a long-term boom. Specific proposals for new models are already in the mill. One would require a site two blocks long which means that the model would have to be built away from the crowded state college campus. But finding a level area that size in the Palouse country of eastern Washington is not easy.

The laboratory does other hydraulic research than the model described in the foregoing. Complicated pipe systems are noticeable in the lab. And, although he admits that the studies are exciting, Tinney refrains from going into details due to confidential nature of the work.

As for the future, the lab expects to continue on big model studies as long as the boom lasts. But it is geared to go into industrial application of hydraulics and expansion of fundamental research. Even before the model study work began, the lab had installed the first commercial McIlroy electric network analyzer which has been used by clients from all over the West for the solution of water and gas distribution problems.

AEC Fellowships to Advance Nuclear Energy Technology

The Atomic Energy Commission has established a program of special fellowships to encourage students to pursue courses of study in the fields of nuclear engineering and the physical sciences.

Part of the commission's general program for aiding the field of education, the fellowships are designed to help overcome the shortage of trained nuclear engineers and scientists.

The program will be administered by the Oak Ridge Institute of Nuclear Studies, under the supervision of the Oak Ridge Operations Office of the commission. Applications will be processed before Mar. 1, 1957.

About 150 fellowships carrying stipends of $1,800, plus tuition and dependency allowances, will be awarded to students registered in, or accepted by, a college or university where a program of graduate study in nuclear energy technology has been developed comparable to the one-year course of study at commission schools.

Fellowships will be awarded on a one-year basis. Options to renew for an additional year will be considered only under special circumstances.

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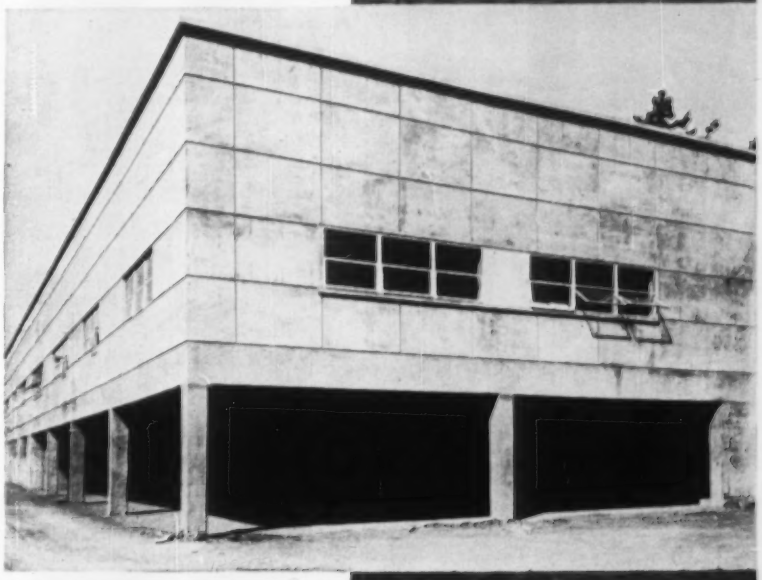

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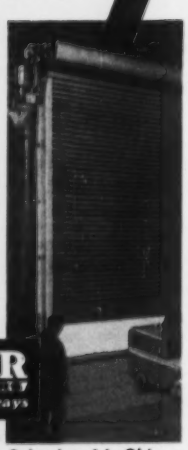

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Mountain Highway in Idaho A $2.7-Million, 2-Year Job

This four-lane highway through a canyon in northern Idaho for the Department of Highways will replace the old Fourth of July Summit Section of U.S. Highway No. 10 in Kootenai County. The plant mix bituminous surface will be built to interstate standards. J. A. Phelps is district engineer for the Department of Highways in Boise.

This contract for a 7.184-mile section let to Fred H. Slate Co. & E. C. Hall Co. of Portland, Oregon, at $2,731,683, is only 0.06% below the second low bid, but is 29.7% below the sixth high bid. The contractor must maintain heavy traffic over the construction site, over the present road and over special detours to be built under this contract.

The job divides up into structural excavation, 47.2% of the contract price, paving 26.9%, drainage 7.35%, rolling and tamping 6.4%, class A concrete and reinforcing metal, rails, fences, guide posts and the cleanup take the remaining 12.15%.

Bids on 1,550,000 cu yd of unclassified excavation range from $0.82 to $1.20 per cu yd. Crushed rock for the base course drew bids $1.75 to $2.75 per ton of rock with maximum sizes of 1 in. and 2 in. and from $1.85 to $3.00 per ton of ¾-in. rock.

Asphaltic road mix bids run from $47 to $70 per ton, while bids on plant mix bituminous surface, class B and D, range from $3.60 to $6.25 per ton. Asphaltic road mix for prime and seal coats drew bids from $0.21 to $0.25 per gallon and emulsified asphaltic road material ranges from $0.17 to $0.25 per gallon.

Class A concrete must contain six bags of cement per cu yd and must have a strength of 3,000 lb per sq in. Bid prices range from $75 to $135 per cu yd.

Culverts will use corrugated plate for 120-in. and 126-in. pipe. All other sizes will be standard and extra strong corrugated metal chosen by the contractor for pipe which is not specified in the table below and for pipe which offered reinforced concrete as option. Bid prices range from $65 to $80 per lin ft of 10-gage pipe, 120 in. in diameter, and from $75 to $120 per lin ft of 8-gage pipe having a diameter of 126 in.

Minimum wage rates to be paid under this contract include $2.27 for general labor, $2.42 for paving form setters, $2.57 for pipe layers, $2.60 for concrete mixers, spreading machine and finishing machine operators, $2.65 for road rollers, $2.85 to $3.10 for road pavers, $2.35 to $2.85 for truck drivers and $3.10 to $3.34 for power shovel and crane operators. Drivers and helpers handling sacked cement shall receive $0.15 per hour premium pay.

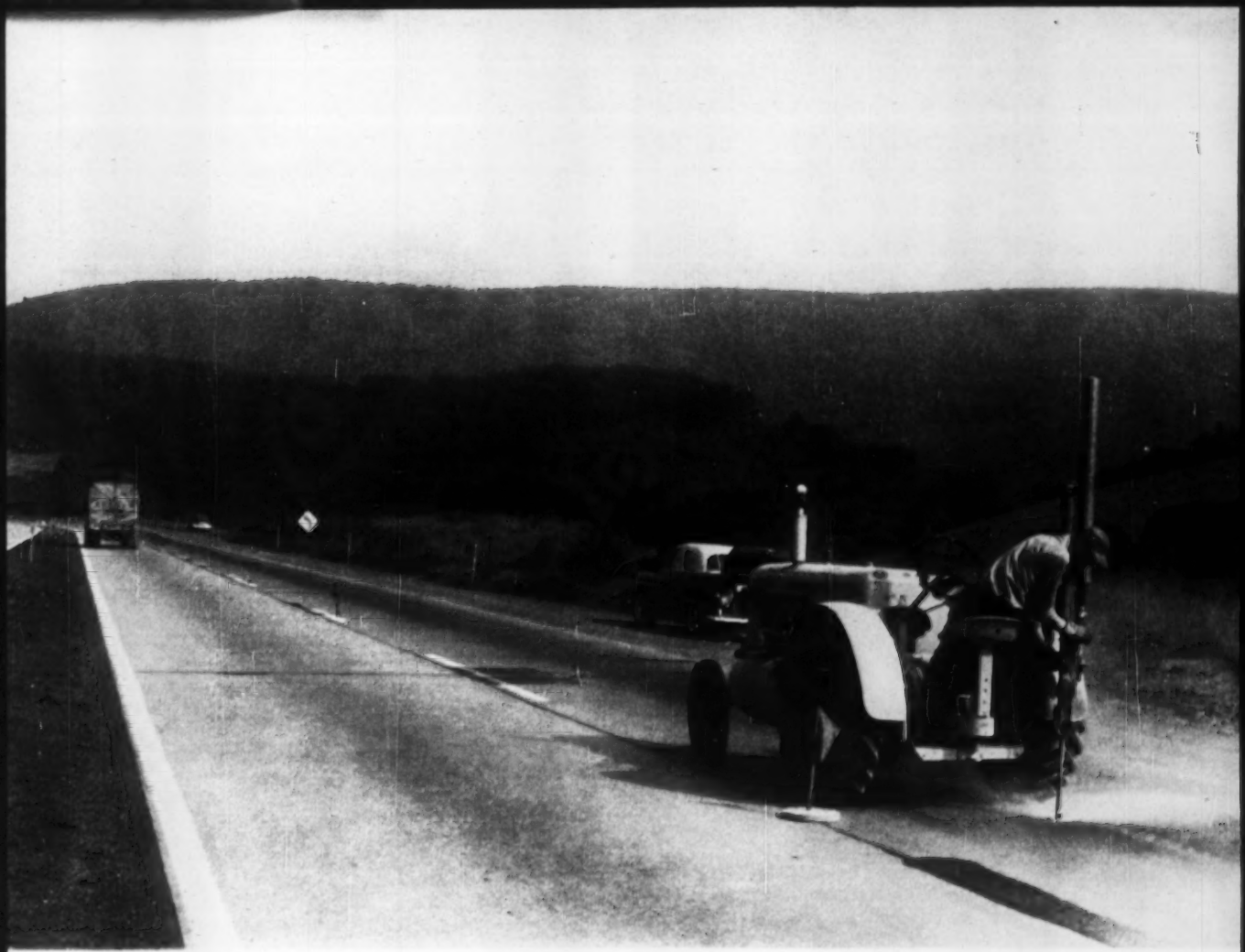
The six bidders on this Federal Aid project include:

1C	Fred H. Slate Co. & E. C. Hall Co., Portland, Oregon	$2,731,683
2	Morrison-Knudsen Co., Inc., Boise, Idaho	2,733,389
6	Kiely Construction Co., Butte, Montana	3,884,017

Bids: 10-16-56 Items	Unit	Quantity	Unit Prices 1C	2
Clearing	ac	135	$500.00	$700.00
Grubbing	ac	52	300.00	250.00
Culvert, remove	ea	1	1,000	300.00
Conc guard rail, remove	lf	2,200	1.00	1.00
Conc headwall, remove		22	0.35	0.40
Exc, unclassif	cy	1,580M	0.82	0.83
for struct, Sch No. 1	cy	110	10.00	10.00
Sch No. 2	cy	4,200	4.00	3.00
Haul	yu	130M	0.75	0.30
Water embankm	Mgal	30,200	1.00	1.00
base & surf crse	Mgal	5,300	2.50	1.50
Rolling, power roller	hr	1,480	8.50	6.00
tamping roller	hr	7,500	10.00	6.00
pneu tire roller	hr	7,500	8.50	7.00
Tamping mech	cy	9,080	2.50	2.50
Furrow ditches	sta	6	50.00	30.00
Base, crse, cr rock, 1" max type A	t	61,000	1.75	1.95
¾", max type B	t	83,200	1.85	2.05
2" max	t	30,000	1.75	1.95
Exist rdbed cl A, recond	mi	2	750.00	800.00
Cr rock in wind ¾" max	t	3,100	1.85	1.95
Asph rd matl RC-1 for prime	gal	87,500	0.21	0.20
Blotter matl, cl C	t	1,500	3.25	3.00
Mix finish & roll cl A	m	2	2,000	1,000
Asph rd matl MC-3 for rdmix pene, 85-100, for pl mix	t	156	47.50	48.00
	t	3,050	38.00	44.00
Bit surf, pl mix cl B	t	26,800	3.85	3.60
D	t	28,500	3.85	3.60
Asph rd matl RC-5 for Seal	gal	67,600	0.21	0.20
Cov cl matl cl 4	t	3,400	5.00	4.00
Conc cl A	cy	339	75.00	90.00
Metal, reinf	lb	37,800	0.15	0.17
Pipe culv, 12"	lf	150	3.00	3.00
18"	lf	4,400	4.00	5.00
24"	lf	2,200	6.00	7.00

Bids: 10-16-56 Items	Unit	Quantity	Unit Prices 1C	2
Pipe culv, 24", bit ct CMP or or RCP, extr str	lf	500	6.00	8.00
24" bit ct CMP, 12-gage	lf	240	7.75	10.00
30"	lf	130	8.00	10.00
30", bit ct CMP, 10-gage	lf	280	12.00	15.00
30", bit ct CMP, or RCP, extr str, 12-gage	lf	350	9.50	11.00
36"	lf	150	12.50	13.50
48", bit ct CMP or RCP, extr str, 10-gage	lf	210	20.00	21.50
60"	lf	74	27.00	28.00
66"	lf	170	31.00	33.00
72"	lf	400	36.00	37.00
CMP, 48"-60", galv	lf	441	15.00	6.00
Pipe culv, corr plate, 120", 10 gage	lf	144	65.00	71.00
126", 8 gage	lf	184	75.00	81.00
Pipe arch, corr plate 7' 11" x 5' 7", 10-gage	lf	210	50.00	57.00
8' 2" x 5' 9", 10-gage	lf	420	51.00	58.00
10' 8" x 6' 11", 10-gage	lf	154	66.00	76.00
10' 11" x 7' 1", 8-gage	lf	220	67.50	79.00
Stl beam type gd rail	lf	21,500	3.25	3.50
Guide posts type 4	ea	950	3.00	5.00
W re fence type 1-a	lf	1,400	0.40	0.35
type 1-B	lf	21,000	0.45	0.35
Stl gates 10', type 2	ea	2	150.00	60.00
Project markers	ea	2	25.00	50.00
Right of way markers	ea	100	12.00	7.50
Drop inlet type 2	ea	44	100.00	180.00
3	ea	35	120.00	200.00
Lined interceptor ditch	lf	1,200	2.50	5.00
Roadside cleanup	ac	100	150.00	180.00
Asph rd matl, SS-1 emulsified	gal	110M	0.22	0.25

Contract awarded: 10-22-56
To be completed: 9-15-58
Liquidated damages: $800.00 per calendar day



Underseal Work on Penn Turnpike Done 45% Faster with One Tractor-Compressor and Drilling Attachment

. . . not only is pavement drilling faster, but costs are lowered through savings in equipment and manpower

One self-propelled Le Roi Tractair has replaced a parade of drill runners and hose-drag helpers struggling along behind truck-towed compressors on the busy Penn Turnpike. This tractor-compressor increases the speed of pavement drilling by 45% on asphalt underseal work. At the same time, it provides a tremendous reduction in equipment and labor costs.

The old method of pavement drilling required a large crew with hand-held pneumatic drills, another crew to drag hose, and two or more truck-towed compressors. Work was slow and expensive. Often underseal crews had to stand around waiting for the drilling operation. And heavy Turnpike traffic was tied up behind the project.

A money- and time-saving solution was found in the Le Roi Tractair, operated by one man. It's a combination 42-hp wheel tractor and a 125-cfm air compressor that can be equipped with a wide variety of mounted attachments and air tools. In this instance, the Le Roi-Cleveland Trac-Jac is the attachment used on the Tractair. The Trac-Jac is set vertically at right angles to the pavement where it swings easily so that the drill point can be centered over location marks made by surveyors. Bits bite into concrete rapidly because the Trac-Jac has a quick-acting air feed.

On this job, the Le Roi Tractair with Trac-Jac attachment drills 100 holes per hour, 12 inches deep through concrete with an average hole spacing of six feet. This "self-contained" unit is all that is needed to drill pavement faster at much lower cost. It also permits traffic to proceed during work without serious interference.

There are many ways that the self-propelled Le Roi Tractair can increase production and cut costs. It can do other highway jobs, and countless tasks in light and heavy building. Many efficient attachments are available, plus dozens of Le Roi-Cleveland Air Tools. See your Le Roi distributor.

Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wis. also manufactures portable and stationary air compressors, air tools, and heavy-duty engines. Write today for information about any of these products.

T-43

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct 25; Next Nov 29
- Wage Rates, Building Board, Lath, Insulation: Last, Nov 1; Next, Nov 29
- Cement, Aggregates, Ready-mixed Concrete, Asphalt: Last, Nov 8; Next, Dec 6
- Iron & Steel Products, Pipe: Last Nov 15; Next, Dec 13

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 12x12 Rgh	PLYWOOD Rail freight increment (See note for base price) ⅜"	PLYWOOD Rail freight increment (See note for base price) ½"
Atlanta †	$83.00	$88.00	$77.50	$76.00	$79.50	$83.00	$81.00					$22.32	$27.24
Baltimore *	92.00	96.00	96.00	98.00	98.00	102.00	114.00			$170.00	$188.00	25.92	31.60
	106.00g	*106.00g*	*123.00g*	*123.00g*	*123.00g*	*123.00g*	*155.00g*	*$144.00*	*$144.00*				
Birmingham †	86.00	88.00	81.00	88.00	91.00	96.00	111.00			118.00	160.00	21.78	26.58
	107.00	*107.00*	*108.50*	*106.50*	*106.50*	*111.50*	*110.00*	*107.00*	*107.00*				
Boston *	102.00/	102.00/	107.00/	107.00/	107.00/	11 6.00a						25.92	31.60
	98.00m	*98.00m*	*116.00*	*116.00*	*116.00*	*123.00*	*120.00*	*120.00*	*141/145*				
Chicago **	96.00	99.00	93.00	107.00	115.00	116.00	111.00			139.00	139.00	22.46	27.37
	106.00	*106.00*	*119.00*	*117.00*	*117.00*	*118.00*	*120.00*	*120.00*	*120.00*				
Cincinnati *	101.25	102.50	90.00	98.25	103.00	111.50	119.50			141.75	141.75	25.00	30.48
	102.00	*103.00*	*107.75*	*115.25*	*114.75*	*115.00*	*138.00*	*138.00*	*138.00*				
Cleveland **	93.00	94.00	99.00	97.00	97.00	97.00						25.37	30.93
			113.00	*110.00*	*110.00*	*110.00*	*150.00*	*150.00*	*128.00*				
Dallas k‡	75.00	82.00	75.00	75.00	72.00	72.00	130.00			130.00	140.00	18.72	22.80
Denver *	*Not in stock*		*135.00*	*135.00*	*135.00*	*140.00*	*160.00*	*160.00*	*16 .00*			13.92	16.98
Detroit ‡	115.00	118.00	114.00	115.00	118.00	122.00				130.00		25.00	30.48
	195.00	*195.00*	*180.00*	*180.00*	*180.00*	*136.00*	*188.00*	*195.00*	*195.00*				
Kansas City *	125.00	125.00	120.00	125.00	135.00	135.00						16.56	20.16
	135.00	*135.00*	*135.00*	*125.00*	*130.00*	*135.00*	*165.00*	*185.00*	*210.00*				
Los Angeles 1	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*120.00*	*120.00*	*120.00*			16.61ab	20.25ab
Minneapolis #	*140.00*	*140.00*	*146.00*	*146.00*	*146.00*	*146.00*	*185.00*	*185.00*	*185.00*			19.89	24.25
Montreal ab	92.00	102.00	92.00	92.00	110.00	128.00				123.00	123.00		
	180.00	*180.00*	*180.00*	*180.00*	*180.00*	*180.00*	*170.00*	*170.00*	*170.00*				
New Orleans †	92.00	92.00	97.00	97.00	96.00	100.00	124.50			156.00	154.00	18.72	22.80
	168.50	*168.50*	*165.00*	*158.50*	*158.50*	*158.50*	*181.00*	*181.00*	*181.00*				
New York ‡	112.00	115.00	120.00	125.00	125.00	125.00	165.00			240/265	240/265	25.92	31.60
			120.00	*158.50*	*124.00*	*[124.00*	*169/180*	*169/180*	*169/180*				
Philadelphia ‡		Range from $117.00 to $137.00				117/137	117/137			214/224	214/224	25.92	31.60
		Range from $151.00 to $168.00				*151/163*	*156/158*	*165.00*	*165.00*				
Pittsburgh 2	130.00	140.00	130.00	155.00	140.00	145.00				155.00		25.92	31.60
	130.00	*140.00*	*130.00*	*155.00*	*140.00*	*145.00*		*200.00*	*200.00*				
St. Louis #	113.00	115.00	123.00d	125.00d	125.00e	131.00e						18.72	22.80
			131.00	*133.00e*	*133.00e*	*139.00e*	*189.00a*	*189.00*	*189.00*				
San Francisco A	*88.00*	*88.00*	*85.00*	*85.00*	*85.00*	*85.00*	*130.00*	*130.00*	*140.00*			12.22	14.91a
Seattle †	*82.00*	*75.00*	*74.00*	*76.00*	*76.00*	*80.00*	*95.00*	*95.00*	*95.00*				
Toronto a	100.00	103.00	98.00	98.00	100.00	100.00	117.00			100.00			
	114.00	*117.00*	*128.00*	*130.00*	*130.00*	*140.00*	*160.00*	*145.00*	*160.00*				

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd., truckload lots, 8/8 Mfdbm.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Tax exempt. *c 8M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock *g No. 1 common. *j 8ft. lengths. *k No. 3 common. *n #3. A incl rail rate from North west mills to San Francisco are $11.50 to $18.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD: Interior Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $143.00; on ¼", $156.00. Exterior ⅜", $148.00, ½", $164.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a Lower rate by water shipment. *b 60,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	77½%	78½g	$0.2540
Baltimore	74½d	76½d	.2540
Birmingham	82½	83½	.1990
Boston	73-10%	72-10%	.2540
Chicago	72%	72%	.2540
Cincinnati	74%	74%	.2540
Cleveland	74-2-10%	74-2-10%	.2940
Dallas	75%	75%	.2615
Denver	73%	73%	.2790
Detroit	74-10-10%	74-10-10%	.2540
Kansas City	76-10%	76-10%	.2790
Los Angeles	70%	70%	.2565
Minneapolis	71-10%	71-10%	.2590
Montreal	40-10-5%bc	40-10-5%b	22.05A
New Orleans	76%	78%	.2590
New York	79%	79%	.4425g
Philadelphia	74%	76%	.2540
Pittsburgh	73%	73%	.2540
St. Louis	76-10%	76-10%	.2590
San Francisco	80%	68%	.2540
Seattle	67%	70%	.2565

Price of 40% Ammonia Gelatin is $1.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, as, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b Discount from list, Apr. 1951; sales tax included, but 2% tax exemption not allowable for. *c 77½% for single strength *d Discount 8/18/52. *e 77½% for double strength

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2¼", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h F.o.b Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.1915	$0.2265	$0.2465
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.1965	.2315	.2515
Rocky Mtn. States	.1965	.2315	.2515
Pacific N. W. States	.1940	.2290	.2490
Pacific S. W. States	.1915	.2265	.2465

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.78/.88	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.83/.93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities

RAILWAY TIES

Prices f.o.b. per tie for carload lots:

		8" x 8" x 8' Untr.	8" x 8" x 8' Tr.	7" x 8" x 8'9" Untr.	7" x 8" x 8'9" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	* 4 2.10	3.18
	Grade 1	1.15	2.00	* 3a 1.70	2.78
Chicago	Red Oak		4.00a		4.60a
New York	S. L. Sap Pine	2.00d	4.00d	3.00g	6.00g
	Mixed Oak	2.50d	4.50d	3.50g	6.50g
Philadelphia	Red Oak	2.95/3.15	4.50/4.70	3.60/3.80	5.50/5.75
St. Louis	White Oak	2.75		3.00	
	Red Oak	2.65	3.20a	2.80	3.50a
	Sap Pine or Cypress		3.10a		3.45a
San Francisco	Douglas Fir	2.13ef	3.09ef	2.88ef	4.63eaf

Tr.—Treated; Untr.—Untreated. *a Creosoted. *b 7" x 9" x 8'. *c Empty cal *d 6 x 8 x 8'6" *e Green. *f f.o.b. cars. *g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham.

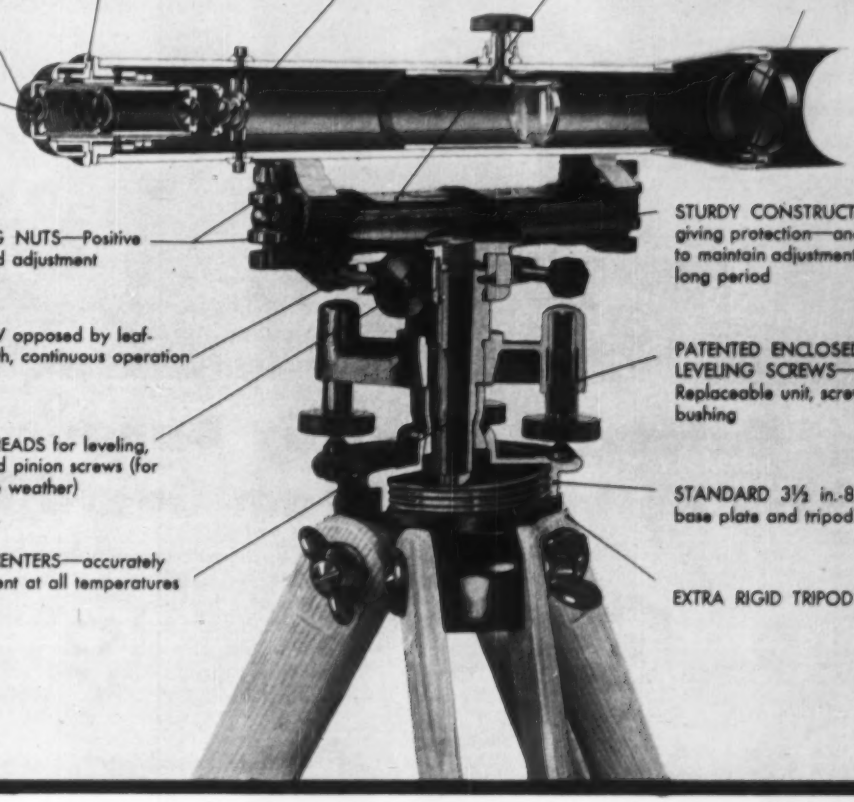
CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.103
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	29.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	14.90

The Gurley Engineers Level

Wye or Dumpy Types



VARIABLE POWER EYEPIECE Permits adjustment of magnification when illumination changes

NON-METALLIC EYEPIECE CAP (for comfort in extreme weather)

HAZE FILTER— Improved image contrast under nearly all light conditions

LEVEL ADJUSTING NUTS—Positive opposing nuts hold adjustment

TANGENT SCREW opposed by leaf-type spring; smooth, continuous operation

NON-METALLIC HEADS for leveling, tangent, clamp and pinion screws (for comfort in extreme weather)

LONG TAPERED CENTERS—accurately fitted; free movement at all temperatures

COVERED GLASS RETICLE— Cross lines on glass. Covered for protection and easy cleaning

LEVEL VIAL—Finely-ground, sensitive, uniform in movement

SUPERIOR OPTICS—Made in Gurley's optical department to precise standards; coated for greater light transmission

STURDY CONSTRUCTION giving protection—and rigidity to maintain adjustment over a long period

PATENTED ENCLOSED LEVELING SCREWS— Replaceable unit, screw and bushing

STANDARD 3½ in.-8 thread base plate and tripod head

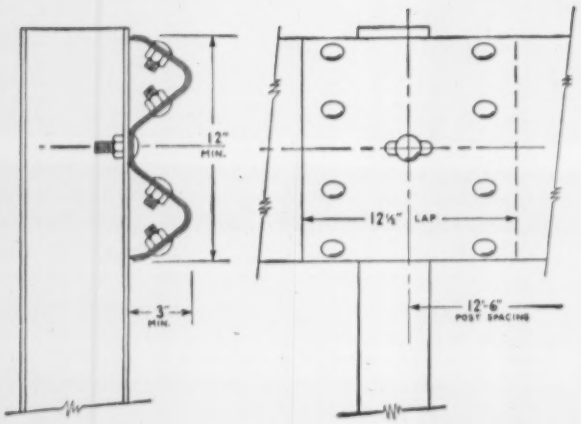
EXTRA RIGID TRIPOD

Model 372 Dumpy Level

GURLEY

W. & L. E. GURLEY, TROY, N. Y.

For Safety at Highway Danger Spots Use Bethlehem Beam Guard Rail



Used at sharp turns, embankments and bridge approaches, Bethlehem Beam Guard Rail forms an effective and dependable service for today's high-speed traffic. At these danger spots, Bethlehem Beam Guard Rail has the strength to withstand considerable shock from a colliding vehicle, yet enough flexibility to re-direct the vehicle parallel to the rail.

Used as a highway divider, Bethlehem Beam Guard Rail helps to reduce accidents in respect to opposing streams of traffic.

Bethlehem Beam Guard Rail is made from 10- and 12-gage steel, bolted with a 12½-in. overlap to make one continuous, impact-absorbing beam. It's easy to install and requires no anchor rods, special tools or complicated adjustments. Details and dimensions are illustrated here.

The nearest Bethlehem sales office will be glad to supply complete information on Bethlehem Beam Guard Rail.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, L. M. FELIX, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Lenox**—NOVITIATE—BA 12/4—New England Province of the Society of Jesus, Very Rev. William E. Fitzgerald, provincial, 297 Commonwealth Ave., Boston, Jesuit Novitiate, Shadowbrook. $3,000,000. Plans deposit $100, refundable. J. Gerald Phelan, 211 State St., Bridgeport, Conn., archt. CD 4/5.

▲ **Mass., Amherst**—PUBLIC HEALTH—BA 12/7—State, University of Mass., Kenneth Johnson, treas., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, U-301, public health bldg., University of Mass. $1,250,000. Plans deposit $100, refundable. James H. Ritchie & Assoc., 135 Clarendon St., Boston, archts. CD 10/6/54.

▲ **Connecticut**—HOUSING—BA 12/14—U. S. Eng., 150 Causeway St., Boston, Mass., Capehart Family Housing Hartford Defense Area, Manchester, Portland, Middletown, ENG-19-016-57-86. $1,056,000. Plans deposit $100. CD 11/8.

HEAVY CONSTRUCTION—LB & CA

▲† **Consolidated Constructors, Inc.**, 807 Congress St., Portland, Me. CA $1,209,453, est. $1,200,000. gate house headquarters, A.I.A., shop, fire station, auto maintenance shop, officers' quarters, club, chapel, PX service, Air Force Station, ENG-19-016-57-55, TOPSHAM, ME. U. S. Eng., 150 Causeway St., Boston, Mass. CD 9/27, under LB.

BUILDINGS—LB & CA

▲ **S. A. Allen Constr. Co.**, 330 Rutherford Ave., Charlestown, Mass. LB Approx. $1,000,000. TEMPLE and SCHOOL, Hammond Pond Parkway, NEWTON, MASS. Temple Mishkan Tefila, 122 Elm Hill Ave., Roxbury, Mass. Bids Nov. 5. CD 10/15.

▲ **E. and F. Constr. Co.**, 94 Wells St., Bridgeport, Conn., CA $1,398,000. DORMITORIES and DINING HALL, University of Bridgeport, BRIDGEPORT, CONN. University of Bridgeport, 200 Park Pl., Bridgeport, Conn. Bids Oct. 30. CD 11/8, under LB.

▲ **Wadhams & May Co.**, 15 Lewis St., Hartford, Conn., CA $2,068,000. Orville H. Platt West Side SENIOR HIGH SCHOOL, Lucchini Farms, Coe Ave. and Oregon Rd., MERIDEN, CONN. City, Bd. Educ., 22 Liberty St., Meriden, Conn. Bids Oct. 29. CD 11/1, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Del., Wilmington**—SCHOOL—BA 11/29—School Bldg. Comn., Mount Pleasant Special School Dist., Duncan Rd. and Phila. Pike, Bellevue, Senior High School, Marsh Rd. and Washington Blvd., Brandywine Hundred, New Castle $3,200,000. Plans deposit $35. Dollar, Bonner & Blake, 1103 Madison St., archts. CD 12/19.

▲ **N. Y., New York**—SCHOOL—BA 12/6—Director Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr. P. S. 7, Lexington Ave. between E. 119 and E. 120 Sts., Manhattan. $2,100,000. Plans deposit $25. CD 8/10.

HEAVY CONSTRUCTION—LB & CA

▲ **Fischback & Moore, Inc.**, 226 E. 41 St., New York 17, N. Y. LB $1,189,671 (5 bidders) furnishing, installing conduit wiring and misc. electrical equip. for 59th Street Power Plant, Manhattan, Contr. No. P-163, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn, N. Y. Bids Nov. 9. CD 10/3.

▲† **C. J. Langenfelder & Son, Inc.**, 8427 Pulaski Hy., Baltimore, Md. CA $12,544,177. runway imprvs., Olmsted Air Force Base, MIDDLETOWN, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore 3, Md. CD 10/19, under LB.

BUILDINGS—LB & CA

▲ **Christensen & Nielson**, 422 Liberty St., Schenectady, N. Y. LB $1,645,736. CENTRAL SCHOOL and BUS GARAGE, CORINTH, N. Y. Bd. Educ., Corinth Central School Dist., Corinth, N. Y. Bids Oct. 23. CD 10/12.

▲ **Clemens Farms, Inc.**, c/o Richard Koelle, R. D. No. 1, Doylestown, Pa. Separate Contracts. $2,450,000. RESIDENTIAL DEVELOPMENT, 98 units, Green St., DOYLESTOWN, PA.

▲ **Severn River Constr. Co.**, 2 W. University Pkwy., Baltimore 18, Md. Owner Builds. $1,529,500. 190 brick veneer DWELLINGS, Rogers Court, Boro Rd., Kessler Court, Riverview Section, BALTIMORE, MD.

Diller-Plank, Inc., Willow St., Lancaster Co., Pa. LB $939,000. (3 bidders) concrete, steel, masonry Northeast HIGH SCHOOL addns., alterations, ELKTON, MD. Cecil Co. Bd. Educ., Elkton, Md. F. Edward Tormey, 2127 Maryland Ave., Baltimore 18, Md. archt.

▲ **Mullan Contg. Co., Inc.**, 3945 Greenmount Ave., Baltimore 18, Md. LB $2,743,000. 2 story, brick, concrete, steel Arbutus SCHOOL, Sulphur Spring Rd., Arbutus, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids Nov. 7. CD 10/23.

▲ **Mullan Contractors**, 3945 Greenmount Ave., Baltimore 18, Md. CA $10,000,000. OFFICE, APARTMENT PROJ., SHOPPING CENTER, MOTEL, York Rd. south of State Teachers College, near TOWSON, MD. Greater Towson Corp., c/o contractor. Hopkins, Pfeiffer & Fenhagen, 10 E. Mulberry St., Baltimore 2, Md., archts. James Posey, 10 E. Pleasant St., Baltimore 2, Md., mech. engr., V. R. P. Saxe, 1701 St. Paul St., Baltimore, 2, Md., engr. CD 5/16.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Alabama-Georgia**—BA On Or About 12/20—U. S. Eng., 2301 Grant St., Mobile 7, Ala., constr. gated spillway at Fort Gaines Lock and Dam, Chattahoochee River, CIVENG-01-076-57-37. $5,000,000-$10,000,000. CD 10/17/55.

BUILDINGS—BA

▲ **La., Baton Rouge**—HOTEL—BA 12/1—A. C. Glassell, Captain Shreve Hotel, Shreveport, 10 story Heidelberg Hotel for Heidleberg Hotel, Lafayette St., Baton Rouge, La. $2,000,000. Extended date. W. G. Knoebel, 906 Sidney St., St. Louis, Mo., archt. CD 10/23

▲ **La., Alexandria**—HOUSING—BA 1/8—Contg. Officer, Base Procurement Office, England Air Force Base, Alexandria, construct and finance 300 family housing units, (Capehart), Bids No. 16-600-57-34. $3,500,000. Plans deposit $100. CD 11/9.

BUILDINGS—SLC

▲ **La., Fort Polk**—HOUSING—U. S. Eng., Box 1229, Galveston, Tex., soon lets contract, construct and finance 1 and 2 story family housing, 2,000 units, (Capehart), Inv. 57-8. $30,000,000. CD 11/7, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., Central Highway Office Bldg., 1221 E. Broad St., Richmond, **The Leo Butler Co., Inc.**, 9217 51st Ave., College Park, Md. CA $4,063,041. Contr. D-2 (Hampton Roads Proj.), constr. waterproofed depressed roadway with 4 overhead bridge structures, 3 buildings, two of which house storm water pumping stations and one of which houses sanitary sewage pumping station, incl. equip. 1.1 mi. between centerline Stations 1115 plus 00 to 1173 plus 00 in City of Norfolk. Bids Oct. 31. CD 11/5, under LB.

▲ **E. G. Singletary & Co.**, 105 Homewood Dr., Greensboro, N. C., CA, $1,144,600, South Buffalo sewage treatment plant addns., GREENSBORO, N. C. City, City Hall, Greensboro, N. C. Bids Oct. 30. CD 11/9, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,
Fla.—**Marion Constr. Co.**, Box 577, Ocala, Fla., CA, $932,800. limerock base, rework, wid'n., existing base, b. conc. surf. course, binder course, drainage structures 6.909 mi. SR-20 and 57, F-016-2 (14) and F-032-1 (3), Jobs 5402-204, 5403-202, Jefferson Co.;
Fla.—**Brinson-Allen Constr. Co.**, Box 1455, Tampa, 1, Fla., CA, $719,243. limerock base with surf., b. conc. surf. course, wid'n. existing bridges 6.662 mi. SR 90, F-012-2 (5), Job 0304-205, Collier Co. Bids Oct. 11, awarded Nov. 7. CD 10/16, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,
Kansas City Bridge Co., 928 Broadway, Kansas City, Mo. LB $2,036,973. substructure for new bridge to replace existing Hathaway Bridge over West St. Andrews Bay near Panama City, consisting of two large piers adjacent to the channel, 12 smaller piers and 21 pile bents, F-017-2 (11), Job 4602-206, SR 30, Bay Co. Bids Nov. 8. CD 10/9.

BUILDINGS—LB & CA

▲ **Milcon Constr. Co.**, 1365 Debraguey St., New Orleans, La. Base Bid $26,823,000, with additive options $29,738,000, est. $33,300,000. (7 bidders) construct and finance HOUSING UNITS (Capehart), ENG-15-029-56-87, FORT KNOX, KY. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids Nov. 8. CD 9/18.

MIDDLE WEST

BUILDINGS—SLC

▲ **Ind., New Albany**—POWER PLANT—Public Service Co. of Indiana, Plainfield, soon lets contract, brick steel super-structure electric power plant, near here, $4,000,000. Sargent & Lundy, 140 Dearborn St., Chicago, Ill., engrs. CD 11/9/53.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus,
O.—**National Engineering & Contracting Co.**, 1968 W. Third St., Cleveland, O., CA, $1,765,790, est. $1,629,700, Type T-71 and structure 0.341 mi. USR 42R, Sect. 17.43, I-1057 (2), City of Cleveland, Cuyahoga Co.;
O.—**Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O. CA, $2,458,485, est. $2,816,200. Type T-71 and structures 3.061 mi. SR 4W, Sect. 7.81, I-316 (7), City of Cincinnati; Village of Elmwood Place and Springfield Twp., Hamilton Co.;
O.—**Arthur S. Langenderfer, Inc.**, 4690 W. Bancroft St., Toledo, O., CA, $949,965, est. $996,600. Type T-50 on B-20 and T-70, 3.284 mi. CR 6, Village of Sylvania and Sylvania and Washington Twps., S-1209 (1), Lucas Co.;
O.—**The A. Bentley & Sons Co.**, 201 Belmont Ave., Toledo, O., CA, $3,325,000, est. $3,922,000, Type T-71 and structures 3.02 mi. USR 24-A, City of Toledo, Sect. 4.04, I-1052 (13), Lucas Co.;
O.—**The W. M. Brode Co.**, 100 Elizabeth St., Newcomerstown, O., CA, $244,986, est. $255,700. Type T-35 and structures, 1.113 mi. SR 212, Village of Bolivar and Lawrence Twp., Sects. (2.73-3.50), S-1203 (1), Tuscarawas Co.;
O.—**A. J. Baltes, Inc.**, 11 Olive St., Norwalk, O., CA, $798,238, est. $890,100, Type T-71 and structures 1.845 mi. SR 10, Carlisle and Eaton Twps., Sections (13.75-15.25), Lorain Co.;
O.—**Smith Constr. Co. of Ohio**, P. O. Box 515, Vienna, O. CA, $519,417, est. $532,000, Type T-35 and structures, 5.317 mi. SR 88, Sections (7.04-11.93), Bristol and Mecca Twps., Trumbull Co.;
O.—**Shelly & Sands, Inc.**, Thornville, O., CA, $1,214,766, est. $1,410,600, Type T-35, 10.936 mi. USR 50A, Marietta and Newport Twps., Sect. 29.60, SR 7, Sect. 40.23, Washington Co. Grand total $11,276,647. Bids Oct. 30. CD 11/9, under LB.

▲† **S. J. Groves & Sons Co.**, 500 Wesley Temple Bldg., Minneapolis, Minn., CA, $2,400,200. 2nd phase, widening and dredging Calumet Say Channel, near Chicago, CIVENG-11-032-57-10, ILLINOIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Oct. 17. CD 11/5, under LB.

BUILDINGS—LB & CA

▲ **Meadowland Estates, Inc.**, 115 W. 5 Ave., Gary, Ind. Own Forces. $10,000,000. 500 HOMES, between 53 and 57 Ave., between Broadway and Harrison St., GARY, IND.

Samson & Diore, 18116 James Couzens Hy., Detroit, Mich. Owner Builds. $920,000. 55 brick ranch HOMES, Belanger and East Crestmont Sts., ROSEVILLE, MICH.

▲ **The Lundblad Co.**, 4070 W. Fort St., Detroit 9, Mich. Owner Builds. $1,250,000. Bradbury Park 50

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

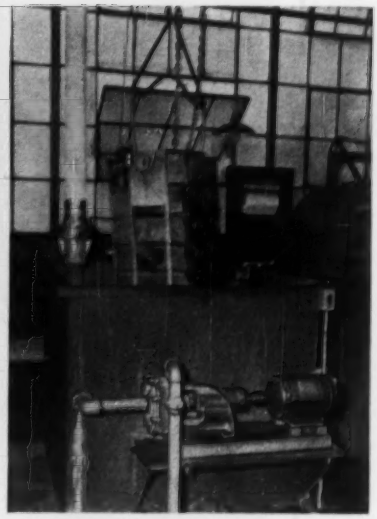
CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

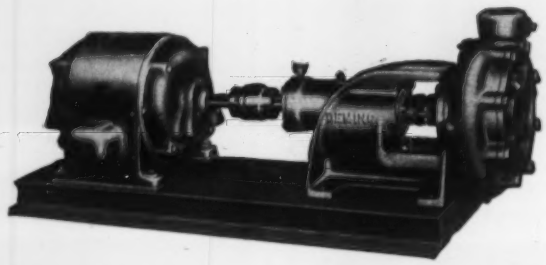
Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

Deming Fig. 4011 Centrifugal Pump delivers 180° caustic solution at rate of 100 g.p.m. against 46-foot head for degreasing trays of hand tools.



Same load of hand tools is rinsed in wash water tank served by another Deming Fig. 4011 Centrifugal Pump at 100 g.p.m. against 46-foot head.



What's *Your* job for this Versatile Deming Pump?

Champion de Arment Tool Company, Meadville, Pa., has a dual job for two identical Deming Fig. 4011 End Suction Centrifugal Pumps. "CHANNELLOCK" pliers and other famous hand tools are manufactured by that company.

Degreasing and rinsing trays of these tools is the dual job serviced by the Deming Pumps, as illustrated in the above views. *What's YOUR job for this versatile Deming Pump?*

Optional features of Fig. 4011 make it readily and economically adaptable for handling a wide variety of liquids, including many corrosive materials.

Bulletin No. 4011-A gives all the facts. Ask for your free copy.

THE DEMING COMPANY • 536 BROADWAY, SALEM, OHIO

DEMING

INDUSTRIAL PUMPS

or more HOUSES, Carlton Dr. south of Nine Mile Rd., SOUTHFIELD, MICH.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Tex., Austin**—STATE OFFICE—BA 12/14—State of Texas, c/o State Bldg. com., Main Admin. Bldg., Austin, 10 story, 173,638 sq. ft. state office bldg. $3,000,000. Kuehne, Brooks & Barry, Perry-Brooks Bldg., Austin, Atlee B. & Robert M. Ayers, 342 W. Woodlawn St., San Antonio, Cato & Austin, 2401 LaBranch St., Houston, George L. Dahl, 2101 N. St. Paul St., Dallas, Stone & Pitts, 1872 Calder St., Beaumont and R. Max Brooks, Perry Brooks Bldg., Austin, archts. CD 12/1.

HEAVY CONSTRUCTION—LB & CA

State Bd. Control, Capitol Bldg., Austin, Tex., rejected bids Sept. 12, air-conditioning for State Capitol Bldg., AUSTIN, TEX. LB $930,222. CD 9/18, under LB.

▲† **Farnsworth & Chambers Co., Inc.**, 3018 Leeland St., Houston, Tex., CA, $19,400,000, academic complex except foundation caissons and steel, Air Force Academy. No. 05-613-57-3, COLORADO SPRINGS, COLO. Dpt. Air Force, Box 1670, Colorado Springs, Colo. Bids Oct. 23. CD 10/29, under LB.

BUILDINGS—LB & CA

▲† **Martin K. Eby Constr. Co., Inc.**, 610 N. Main St., Wichita, Kan. CA $4,795,979. 3 story ACADEMIC BLDG., DA-23-028-ENG-3060 (IFB 57-16), FORT LEAVENWORTH, KAN. U. S. Eng., 1800 Federal Office Bldg., 911 Walnut St., Kansas City, Mo. CD 10/26, under LB.

▲ **Refinery Engineering Co.**, Wright Bldg., Tulsa, Okla., CA Est. $4,000,000. 6,000 b/d NAPHTHA UNIFIER, DUNCAN, OKLA. Sunray Mid-Continent Oil Co., 907 S. Detroit St., Tulsa, Okla. CD 5/7.

▲ **Manhattan Constr. Co.**, Manhattan Bldg., Muskogee, Okla. CA Est. $2,500,000. 3 story 238,000 sq. ft. RETAIL STORE, 21st and Yale Sts., TULSA, OKLA. Sears Roebuck & Co., 1409 S. Lamar St., Dallas, Tex. Bids Oct. 16. CD 10/11.

▲ **Refinery Engineering Co.**, Wright Bldg., Tulsa, Okla. CA Est. $6,000,000. 20,000 b/d naphtha unifier, 12,000 b/d platformer with re-run column, 2,417 b/d LPG recovery unit, 2,453 b/d butane isomerization unit and 2,470 HF alkylation unit with debutanizer and re-run column at REFINERY, TULSA, OKLA. Sunray Mid-Continent Oil Co., 907 S. Detroit St., Tulsa, Okla. CD 5/7.

▲ **Tulsa Rig & Reel Co.**, Philtower Bldg., Tulsa, Okla. LB $1,429,200, est. $1,250,000. James Monroe JUNIOR HIGH SCHOOL, TULSA, OKLA. Bd. Educ., 410 S. Cincinnati, St., Tulsa, Okla. Bids Oct. 30. CD 10/9.

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif. design and construct, CA Est. $15,000,000, adding crude capacity; CA Est. $20,000,000, building TCC unit; CA Est. $5,000,000 sovaformer for Beaumont REFINERY, BEAUMONT, TEX. Grand total est. $54,495,000. Magnolia Petroleum Co. (Socony-Mobil), P.O. Box 900, Dallas 21, Tex. CD 2/10/56, 12/27/51, 6/27/52 and 1/19/50;
Foster-Wheeler Corp., 165 Broadway, New York 6, N. Y., design and construct, CA $7,500,000, sovafiner; CA $2,495,000, H_2S recovery unit (Beaumont, Tex.);
C. F. Braun, 1000 S. Fremont Ave., Alhambra, Calif., design and construct, CA $4,500,000, sulfuric alkylation unit (Beaumont, Tex.).

▲ **Owner c/o J. Ted Cottle**, 112 N. Stanton St., El Paso, Tex., cancelled bids, main SHOPPING CENTER, EL PASO, TEX. Est. $3,240,000. CD 11/7.

▲ **Linbeck Constr. Co.**, Box 13007, Houston, Tex., CA, $2,474,700, est. $2,600,000. SENIOR HIGH SCHOOL, Yates area, HOUSTON TEX. Houston Independent School Dist., 1300 Capitol St., Houston, Tex. Bids Nov. 1. CD 11/8, under LB.

▲ **Ralph M. Parsons Co.**, 617 S. Olive St., Los Angeles 14, Calif. CA, 21,000 b/d ULTRAFORMER UNIT, TEXAS CITY, TEX. American Oil Co., Texas City, Tex. CD 8/21/56.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

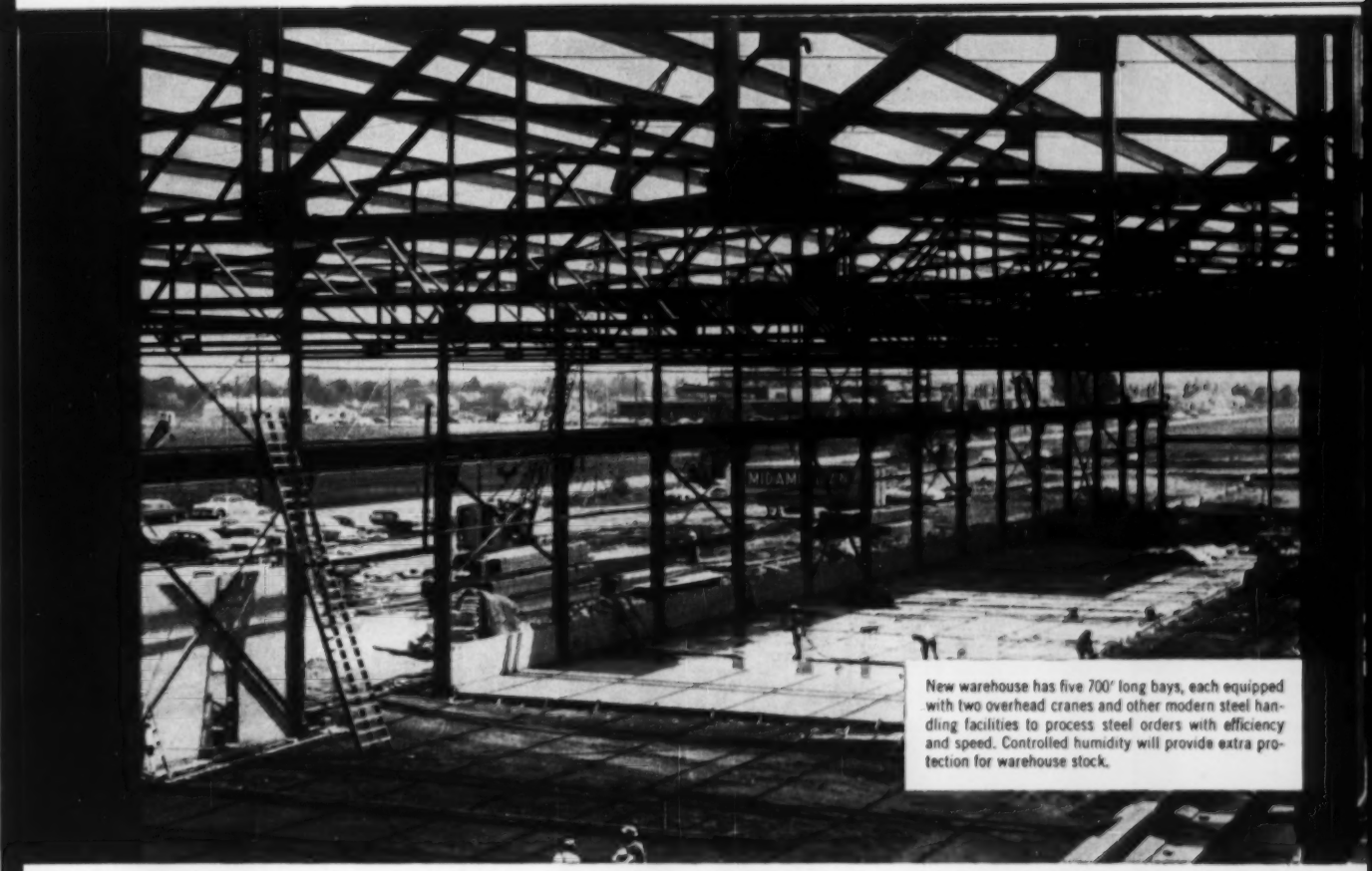
▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Calif.—**El Yeager**, P. O. Box 87, Riverside, Calif., LB $1,689,517 (4 bidders) grading, paving and 7 bridges 1.4 mi. freeway, San Bernardino Co.;
Calif.—**Griffith Co.**, 1060 S. Broadway, Los Angeles, Calif., LB $1,229,782 (4 bidders) grading, surf. 1.7 mi. freeway and Lake Murray Blvd. overcrossing, San Diego Co. Bids Nov. 8. CD 10/11.

▲ **CALIFORNIA**—State Div., Hys., 1120 N St., Sacramento,
Piombo Constr. Co., M & K Corp., and **Connolly-Pacific Co.**, P. O. Box 395, San Carlos, Calif., CA $5,103,614, grading, paving 3.8 mi. 6-lane divided hy. and 7 bridges Bayshore Freeway, San Mateo Co. Bids Oct. 24, awarded Nov. 5. CD 10/26, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
C. K. Moseman, 727 Barron Ave., Redwood City, Calif., LB $1,939,610, est $1,960,000 (6 bidders) concrete, steel girder bridge across Feather River, Sutter Co. Bids Nov. 7. CD 10/11.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
McCammon-Wunderlich Co. & Wunderlich Contg. Co., 2555 Pulgas Rd., Palo Alto, Calif., LB $3,601,981,

(Continued on page 64)



New warehouse has five 700' long bays, each equipped with two overhead cranes and other modern steel handling facilities to process steel orders with efficiency and speed. Controlled humidity will provide extra protection for warehouse stock.

Junior Beams as roof purlins speed erection of ultra-modern A. M. Castle & Co. steel warehouse

Two hundred tons of 10" lightweight J&L Junior Beams are used as roof purlins in the new $4,500,000 Franklin Park, Ill., warehouse of A. M. Castle & Co., nationally known steel distributor.

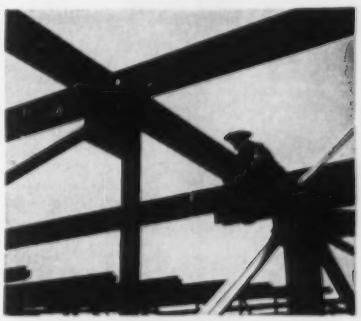
Erection is simple and fast. Junior Beams are cut to length and punched for bolts prior to arrival on the job. Their light weight makes them easy to raise and position. Connections are made with end plates and high tensile bolts.

This ultra-modern warehouse provides an outstanding example of one type of structure where J&L Junior Beams are employed to advantage. Other applications include almost every type of light occupancy buildings. Architects and builders use Junior Beams to develop functional, permanent, safe structures that are low in over-all costs.

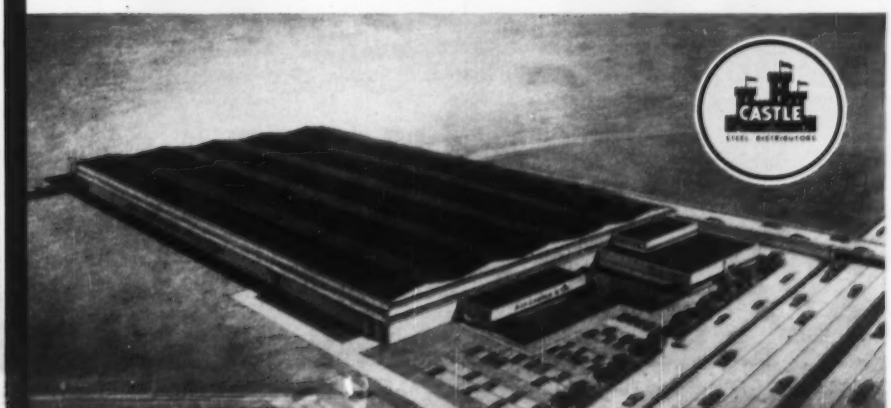
Find out more about them today. Write for a free copy of our technical literature on J&L Junior Beams.

J&L STEEL

Jones & Laughlin
STEEL CORPORATION · PITTSBURGH



The Junior Beams are installed on 8' centers over 24' spans. To save steel, 9 lb., 10" Junior Beams are cantilevered beyond the main trusses.



Over 2,200 tons of structural steel, fabricated and erected by Allied Structural Steel Companies, are being used in this new $4,500,000 steel warehouse at 3400 North Wolf Road, Franklin Park, Illinois.

ARCHITECT AND BUILDER:
Clearing Industrial District, Inc.
Architect, J. S. Cromelin
FABRICATORS: Gage Division
Allied Structural Steel Companies
ERECTORS: Industrial Construction Co.
Division of Allied Structural Steel Companies

SWEET'S

(Continued from page 62)

est. $3,842,000 (9 bidders) 6.1 mi. 4-lane expressway highway 40 between Heather Glen near Applegate to Colfax, incl. 5 major structures, Placer Co. Bids Nov. 7. CD 10/11.

▲† **Pacific Bridge Co.**, 256 Montgomery St., San Francisco 4, Calif., CA, $1,388,500. Wharf No. 4, Naval Constr. Battalion Center, NBy-4185, PORT HUENEME, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Oct. 18. CD 10/24, under LB.

BUILDINGS—LB & CA

▲ **Rosendahl Corp.**, 100 Bush St., San Francisco, Calif., CA, $2,500,000. brass mfg. PLANT, NEWARK, CALIF. Titan Mfg. Co., Bellfonte, Pa., Garretson & Elmendorf, 417 Market St., San Francisco, Calif., engrs.

▲ **M & K Corp.**, 519 California St., San Francisco, Calif., LB $1,000,000. 1 story, 230,000 sq. ft., rein.-con. egg processing PLANT, SAN LEANDRO, CALIF. Poultry Producers of Central California, 840 Battery St., San Francisco, Calif. Bids Nov. 2. CD 10/31.

▲ **Hugh C. Jackson & Assocs.**, 394 University Ave., Palo Alto, Calif. Owner Builds, $1,000,000. 120-unit MOTEL, restaurants, 2 swimming pools, 2 banquet rooms, on Bayshore Blvd, SUNNYVALE, CALIF.

CANADA

BUILDINGS—BA

▲ **Man., Winnipeg**—OFFICE—BA 11/27—Huron & Erie Mortgage Corp., and Canada Trust Co., Lindsay Bldg., 228 Notre Dame Ave., reconstr. office, Portage Ave. and Fort St. $1,000,000. Moody & Moore, 295 Broadway Ave., archts. CD 1/11.

HEAVY CONSTRUCTION—LB & CA

▲ **S. McNally & Sons, Ltd.**, 1544 The Queensway, Toronto, Ont., LB $1,189,000. (6 bidders) Contract D-13-56, 10,731 ft. diam. 54- to 84-in. East Don River Interceptor Sewer; LB $1,091,000. (4 bidders) Contract D-19-56, 10,428 ft. 54-in. East Don Interceptor Sewer, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Nov. 5. CD 10/19.

▲ **Brush Aboe (Canada), Ltd.**, 296 Richmond St. W., Toronto, Ont., LB $1,026,646. (2 bidders) supplying, del. and installing gas engine blowers and auxiliaries Humber River Sewage Treatment Plant, north of Queensway west bank of Humber River, TORONTO, ONT. Municipality of Metropolitan, Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Oct. 29. CD 9/5.

▲ **Russell Constr., Ltd.**, Harbor Commissioners Bldg., Fleet St., West, Toronto, Ont., LB $7,280,575. (3 bidders) dredging in Welland Ship Canal from Guard Gate to Station 710 plus 00, Welland; QUEBEC and ONTARIO St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids Nov. 6. CD 10/5;

Canadian Westinghouse Co., Ltd., 286 Sanford Ave. N., Hamilton, Ont., LB $145,997 supplying lighting standard and lighting units for lighting the locks and prisms of St. Lawrence Seaway. (Quebec and Ontario).

BUILDINGS—LB & CA

▲ **Redfern Constr. Co., Ltd.**, 36 Toronto St., Toronto, Ont., CA $2,000,000. OFFICE and PARKING GARAGE, 188 University Ave.; TORONTO, ONT. Canadawide Investments, Ltd., 330 Bay St., Toronto, Ont. CD 7/10.

▲ **Eastern Constr. Co., Ltd.**, Box 96, Walkerville, Ont., CA Est. about $1,623,000. 4 story, bsmnt., 62x83 ft., plus 28x48 ft. wing, rein.-con. steel, brick, CITY HALL, Civic Square, WINDSOR, ONT. City, City Hall, Windsor, Ont. Bids Oct. 26, awarded Oct. 30. CD 10/1.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲† **Pacific-Alaska Contractors**, 1515 Center St., Tacoma, Wash. LB $370,427 (6 bidders) Schedules I and II Chester Creek and Airport Heights sewers, ANCHORAGE, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau, Alaska. Bids Oct. 31;

Patti-MacDonald Constr. Co., Anchorage, Alaska, LB $835,073 (6 bidders), Schedules III, V and VI, Chester Creek and Airport Heights sewers (Anchorage, Alaska);

Stock & Grove, Inc., Anchorage, Alaska, LB $242,242 (6 bidders) Schedules IV and VII, Chester Creek and Airport Heights sewers (Anchorage, Alaska).

PROPOSED PROJECTS

WATER SUPPLY

▲ **Md., Baltimore**—City, Bureau Water Supply, 503 Municipal Bldg., voted bonds Nov. 6, water supply, incl. pipe line to Susquehanna River and enlarging, imprv. distr. sys. $45,000,000. CD 9/13.

▲ **Ont., Toronto**—The Municipality of Metropolitan Toronto, 67 Adelaide St. E., 36 inch water main from Runneymede Rd. and Colbeck St. to St. Alban's pumping station at Kipling Ave., $2,199,000, Gore & Storrie, Ltd., 1130 Bay St., consult. engrs.; 42 and 48 in. water main from Humberside Ave. and Indian Rd. Crescent to new reservoir site on Lawrence Ave. W., $1,000,000, James F. McLaren Assoc., 321 Bloor St. E., consult. engrs. CD 10/1

SEWERS, WASTE DISPOSAL

▲ **Ill., Evanston**—City, City Hall, storm relief sewerage sys., west of Ridge Ave. from Main to Oakton St. $1,360,000. Alvord, Burdick & Howsen, 20 N. Wacker Dr., Chicago, consult. engrs.

▲ **Md., Baltimore**—City, Bureau Sewers, 312 Municipal Bldg., Zone 2 voted bonds Nov. 6, sewers. $5,000,000. CD 9/13.

▲ **N. Y., Bay Park**—Bd. Supervs. Nassau Co., Court House, Mineola, Bay Park, Sewage Treatment Plant expansion. $7,000,000. Greeley & Hansen, 220 S. State St., Chicago, Ill., consult. engrs.

▲ **O., Cincinnati**—City, City Hall, voted bonds Nov. 6, sewers, imprvs., various locations $2,500,000. CD 10/16.

▲ **O., Cincinnati**—Hamilton Co. and Cities of Cincinnati, St. Bernard, Norwood, Court House, St. Bernard, voted $565,000 bonds Nov. 6, Ross Run trunk sewer. Total est. $3,700,000. Al. LeFeber & Assoc., 2933 Woodburn Ave., Cincinnati, consult. engrs. C. A. Harrell, city engr. for Cincinnati; C. L. Hutchinson, engr. for Hamilton Co.; A. C. Schildmeyer, engr. for St. Bernard, Ray Achten, engr. for Norwood. CD 8/15.

▲ **O., Cleveland**—City, Dpt. P. Service, Louis L. Drasler, dir., City Hall, Zone 14, defeated bonds Nov. 6, incinerators, $2,000,000; Adache Eng. Co., Old Arcade, Zone 14, consult. engr.; voted bonds Nov. 6, sewers, $6,000,000. CD 7/2.

▲ **O., Euclid**—City, City Hall, 585 E. 222 St., Cleveland, Zone 23, voted bonds Nov. 6, sewage treatment plant. $4,800,000. Havens & Emerson, 640 Leader Bldg., Cleveland, Zone 14, consult. engrs. CD 7/3.

▲ **O., Parma**—City, City Hall, 6611 Ridge Rd., Zone 29, voted bonds Nov. 6, sewers. $5,000,000. Burt Chabek of Verne Clark Eng. Co., 4050 Brookpark Rd., Cleveland, Zone 29, consult. engrs. CD 7/23.

▲ **O., Sandusky**—City, City Hall, voted bonds Nov. 6, sewage treatment plant, intercepting sewers. $2,000,000. Jones, Henry & Williams, Security Bldg., Toledo, consult. engrs. CD 7/26.

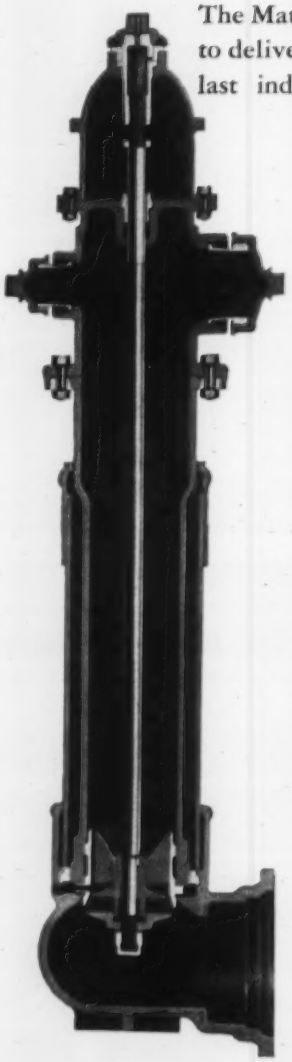
▲ **R. I., Providence**—City, City Hall, voted $1,400,000 bonds Nov. 6, altering sewage plant and sewerage const. CD 10/26.

BRIDGES

▲ **O., Cleveland**—City, City Hall, Zone 14, defeated bonds Nov. 6, bridges. $5,000,000. CD 7/2.

Reduce Wear, Save with Mathews

The Mathews Flange Barrel Hydrant is designed to deliver every available gallon of water and to last indefinitely with minimum maintenance.



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The Flange Barrel

The swivel flange at the base of the nozzle section permits nozzles to be faced toward any point in the complete circle. Saves time on original installation and on replacements.

On broken hydrants, top cap and nozzle sections can usually be salvaged, thus reducing accident costs.

The Stuffing Box Plate

Cast integral with the nozzle section, the plate keeps water and sediment away from the operating thread. Hydrant remains operable in any weather. Wear on the operating thread is largely eliminated.

Made by

Available with mechanical joint pipe connections.

▲ **OREGON and WASHINGTON**—Oregon Hy. Comn., Salem, and Washington Hy. Comn., Olympia, Wash. bridge over Columbia River at its mouth from Astoria, Ore. to Megler, Wash. $34,000,000. New feasibility study to be made. CD 4/29/55.

STREETS AND ROADS

▲ **Calif., San Rafale**—Marin Co., Court House, voted $7,500,000 bonds Nov. 6, imprv. county roads. CD 4/16.

▲ **NEW YORK**—Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,
Nassau Co.—4-lane highway to bypass Miracle Mile, from Northern Blvd. and East Shore Rd. and running northeast to rejoin Northern Blvd. at Manhasset Woods Rd., Manhasset. $5,000,000. To be finished in 1959. Now in study stage.
widen 1.5 mi. Northern State Parkway to 8-lanes from Northern end of Meadowbrook Parkway to new Long Island Expressway, $3,000,000. Bids in January 1957. CD 4/14/55.

▲ **O., Cincinnati**—City, City Hall, voted bonds Nov. 6, expressway program, $15,500,000; street imprvs. various locations, $6,500,000. CD 10/16.

▲ **O., Cincinnati**—Comrs. Hamilton Co., Court House, voted bonds Nov. 6, road imprvs., various locations. $6,000,000. CD 10/16.

▲ **O., Cleveland**—City, City Hall, Zone 14, defeated bonds Nov. 6, opening, extending, widening and relocating limited access highways, $6,000,000; voted bonds Nov. 6, grading, paving, draining and resurf. streets, $5,000,000. CD 7/2.

▲ **O., Cleveland**—Comrs. Cuyahoga Co., Court House, voted $3,000,000 bonds Nov. 6, imprv. roads, to Warrensville site of Pan-American Games. Albert S. Porter, co. engr. CD 7/23.

▲ **O., Fairfax (Cincinnati)**—Village, voted $1,400,000 bonds Nov. 6, street and sewer imprvs. Larson-McKinney & Miller, 9th and Main Sts., Cincinnati, consult. engrs. CD 7/23.

▲ **Tex., Beaumont**—Jefferson Co., Court House, voted bonds Nov. 6, road work, paving, widening from Chambers county line to Neches River Bridge, $1,690,000 road work, paving, Hy. 347, Central Gardens to Hy. 87, Port Arthur, $2,150,000; Hy. 87, intracoastal canal to Neches River Bridge, $518,300; 4-lanes, Hy. 90 from 4 St. Beaumont to Liberty Co. line, $2,287,850. W. O. Bower, c/o owner, engr. CD 10/9.

EARTHWORK, WATERWAYS

▲ **Tex., Victoria**—Victoria Co. Navigation Dist., Court House, voted $3,500,000 bonds Oct. 30, exten. Guadalupe River Barge Canal. $11,000,000. CD 10/15.

Time and Money Flange Barrel Hydrant

Breakable Flange and Stem Coupling

Optional feature furnished at extra cost. Specially designed flange in the standpipe just above ground level and a frangible coupling in the hydrant stem are designed to snap when struck a blow heavy enough to break the hydrant. Both can be replaced quickly *and without excavating*, while hydrant head, standpipe and stem remain undamaged.

ADDITIONAL ADVANTAGES

Two-way heads can be replaced with steamer and two-way heads without shutting off water.

Shield operating nut assures protection for the revolving nut from sleet, snow or dust.

An extension piece may be inserted between hydrant head and barrel or between barrel and elbow.

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Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

AIRPORTS

▲ **Calif., San Francisco**—AIRPORT IMPRVS.—City, Dpt. P. Wks., City Hall, voted $25,000,000 bonds Nov. 6, San Francisco International Airport imprvs., incl. runways extens., helicopter facilities, addnl. concourses to handle passenger loading. CD 10/25.

▲ **Mich., Detroit**—AIRPORT IMPRVS.—Bd. Supervs. Wayne Co., City-County Airport, plans by Giffels & Vallet, Inc., L. Rossetti, 1000 Marquette Bldg., Detroit, Wayne County Airport imprvs. $10,721,228. Leroy C. Smith, co. hy. engr. and airport mgr. CD 3/15/55.

▲ **R. I., Smithfield**—AIRPORT—State of Rhode Island, State Office Bldg., Providence, voted $1,500,000 bonds Nov. 6, airport imprvs., runways, admin. bldg. CD 10/26.

LATIN AMERICA

▲ **Cuba, Havana** — HOTEL, etc. — Cuban Riviera Hotel Corp., Havana, plans by Polevitzky, Johnson & Assocs., 250 N. E. 18 St. S., Miami, Fla., U. S. A. 17 story 200x500 ft. Hotel "Havana Riviera", 100 ft. long swimming pool. $5,500,000. Saentz, Cancio Martin, Cuba, structural engr. R. L. Duffer & Assocs., 3356 Virginia St., Miami, Fla., U. S. A., mech. engr.

PUBLIC BUILDINGS

▲ **Calif., Fresno**—SCHOOL—Fresno Unified School Dist., 2348 Mariposa St., voted bonds Nov. 6 new elementary school and existing schools addn. $11,775,000.

▲ **Calif., Los Angeles**—GARAGES—Bd. Supervs. Los Angeles, Hall of Records, plans by Stanton, Stockwell, Williams, Wilson, Austin, Field & Try, 627 S. Carondolet St., 2 level parking garages on either side of wall, bounded by Court, Hope, and 1st Sts., and Grand Ave., Court, Hope and Temple Sts. and Grand Ave., Capitol Proj. 7071-7072. $1,944,800.

▲ **Calif., Los Angeles**—HOSPITAL—Los Angeles Co., Hall of Records, voted $15,400,000 bonds Nov. 6 replacing county's Harbor Hospital, Torrance. CD 8/27

▲ **Calif., Los Angeles**—JUVENILE DETENTION—Los Angeles Co., Hall of Records, voted $15,485,000 bonds Nov. 6, juvenile detention and placement facilities. CD 8/24.

▲ **Calif., Los Angeles**—SCHOOL—Bd. Educ., 1425 S San Pedro St., plans by Smith, Powell & Morgridge, 208 W. 8 St., Millikan Junior High School, San Fernando, $2,000,000. CD 4/8/55.

▲ **Calif., Redding**—SCHOOLS—Shasta Union High & College School Districts, Redding, voted bonds, schools, $3,000,000. CD 10/3.

▲ **Calif., Redwood City**—SCHOOL—Sequoia Union High School Dist., Broadway and El Camino Real, Redwood City, plans by Peter Kump & Ernest Kump Assoc., 530 Santa Cruz Ave., Menlo Park, Woodside-Alameda High School. $1,790,000. CD 6/2/48.

▲ **Calif., San Bernardino**—COURTHOUSE—San Bernardino Co., County Courthouse, plans by Stiles & Robert Clements, 210 W. 7th St., Los Angeles, courthouse addn. $1,720,000. CD 3/18/46.

▲ **Calif., San Diego**—CONVENTION HALL—City, Civic Center, San Diego, defeated $8,500,000 bonds Nov. 6, convention hall. CD 9/12.

▲ **Calif., San Diego**—SCHOOLS—San Diego Unified School Dist., 825 Union Ave., voted $27,000,000 bonds Nov. 6, primary and secondary school and junior college construction. CD 8/21.

▲ **Calif., San Francisco**—SCHOOLS—Dpt. P. Wks., City Hall, voted $27,000,000 bonds, Nov. 6, new high schools, 3 new elementary schools, existing schools addns., incl. San Francisco City College buildings CD 10/25.

▲ **Calif, San Rafael**—SCHOOL—San Rafael High School, 215 Mission St, voted bonds Nov 6, school near Terra Linda, $2,350,000. CD 10/22.

▲ **Calif., Stockton**—COURT HOUSE—San Joaquin Co., Court House, defeated binds Nov. 6, 5 story, 295,000 sq. ft., rein.-con. court house, $6,400,000. CD 9/26.

▲ **Colo., Colorado Springs**—SCHOOLS—School District No. 11, Colorado Springs, bond election Dec. 11, Senior High School, Junior High School, and 3 elementary schools, also West Junior High School addn. $6,900,000.

▲ **Conn., Milford**—SCHOOL—Town, Town Hall, West High School, Lansdale Ave. $1,400,000. Frederick P. Clark Assocs., 41 Theodore Fremd Ave., Rye, N. Y., consult. engrs. CD 10/30.

▲ **Conn., Stratford**—SCHOOL—Town, Town Hall, Junior High School, Chapel St. $1,500,000.

▲ **Fla., Miami**—HOSPITAL EXPANSION—Comrs. Dade Co., Court House, voted $7,500,000 bonds Nov. 6, Jackson Memorial Hospital expansion program. CD 9/18.

Ga., Decatur—SCHOOLS—DeKalb Co. School Dist., Court House, voted $11,000,000 bonds Oct. 30, new schools and school addns. CD 10/23.

▲ **Idaho, Boise**—AUDITORIUM—Ada Co., County Court House, defeated $1,900,000 bonds Nov. 6, public auditorium. CD 10/11.

▲ **Ill., Chicago** — PARKING GARAGE — Chicago Park Dist., 425 E. 14 St., parking garage, Oak St. bend of Lake Shore Dr., $2,413,000. Ralph Burke, Inc., 20 N. Wacker Dr., consult. engr.

▲ **Ill., Elmhurst** — HIGH SCHOOL — York Community High School Dist. 88, 355 W. St. Charles St., Elmhurst, plans by Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., high school, S. Ardmore Ave.

(Continued on page 67)

AMERICAN BRIDGE builds new Cleveland Bridge for B&O

This new B & O Railroad bridge, recently installed over the Cuyahoga River, in Cleveland, replaces the original bridge built in 1911. Designed by Hardesty & Hanover, Consulting Engineers, New York, N. Y., the bridge consists of one single-track, single-leaf heel trunnion thru-truss bascule span, 255 feet long; one single-track thru-truss tower span for the West approach, 55 feet long; and one single-track deck plate girder span for the East approach, 63 feet long.

All steelwork for this structure was fabricated and erected by the American Bridge Division. 1,796 tons of structural steel, 166 tons of castings and 13 tons of reinforcing steel were used.

Under the terms of the contract, the responsibility of the American Bridge Division included the operator's house, machinery house, operating machinery, counterweight boxes and trusses, counterweight concrete, electrical equipment for bascule span operation, engine-generator for emergency span operation and lighting, main trunnions and bearings, counterweight trunnions and bearings, platforms, walkways and stairs, installation only of railway deck, temporary timber stringer span at east abutment, and removal of existing bridge superstructure. All in all, a large and important job, and another proof of the ability of the American Bridge Division to handle successfully and efficiently all types of bridge installation.

If you would like to know more about the bridge-building facilities of the American Bridge Division, just get in touch with our nearest office. We'll be glad to discuss your bridge requirements with you.

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

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UNITED STATES STEEL

(Continued on page 65)

near Villa Park. $9,500,000. CD 6/5/52 under Ill., Villa Park.

▲ **Ind., New Castle**—SCHOOL—City, City Hall, plans by Boyd E. Phelps, Inc., 1000 Washington St., Michigan City. Walter P. Chrysler Memorial High School. $3,000,000. Bids about Jan. 15.

▲ **Md., Baltimore**—CIVIC CENTER SPORTS ARENA—City, Bureau Bldg. Constr. 410 Municipal Bldg., Zone 2, voted bonds Nov. 6 for civic center sports arena, $6,000,000. CD 9/13.

▲ **Md., Baltimore**—SCHOOLS—City, Bureau Bldg. Constr. 410 Municipal Bldg., Zone 2, voted bonds Nov. 6 schools. $29,500,000. CD 9/13.

▲ **Md., Silver Spring** — HOSPITAL — Montgomery Co. Council, Silver Spring Hospital Assoc., Rockville, defeated $3,000,000 bonds Nov. 6, hospital. CD 8/30.

▲ **Neb., Scottsbluff**—POWER PLANT—City, City Hall, defeated $1,300,000 bonds Nov. 6, power plant and distr. CD 10/1.

▲ **N. J., Bernardsville**—SCHOOL—Bd. Educ., Olcott School, Bernardsville Boro, grammar school, Old Polo Grounds, Mendham Rd. $1,500,000.

▲ **N. J., Newark**—GARAGE, etc.—City Parking Auth., City Hall, parking garage, etc. $2,000,000-$3,000,000. Ramp Building Corp., 230 Park Ave., New York, N. Y., consult. engrs. CD 10/30.

▲ **N. J., Rutherford**—SCHOOL—Bd. Educ., Borough of Rutherford, plans by Micklewright & Mountford, E. Stuyvesant Ave. at Prospect St., Trenton, Junior High School. $1,342,000. Bids in May.

▲ **N. J., Williamstown**—SCHOOL—Monroe Twp. Bd. Educ., Williamstown, plans by Harold M. Klaisz, Woodbury, 1 and 2 story brick block steel, concrete, 28 classroom, Senior High School, $1,500,000. CD 2/6.

▲ **O., Akron** — JUVENILE DETENTION BUREAU — Comrs. Summit Co., Court House, voted $1,500,000 bonds Nov. 6, Juvenile Detention Bureau. CD 7/19.

▲ **O., Berea**—SCHOOL—Berea School Bd., Berea, voted $3,000,000 capital improvement levy Nov. 6 for 5 year to provide approx. $350,000 per year for 1 school each year. $1,750,000. CD 8/20.

▲ **O., Cambridge** — SCHOOL — Bd. Educ., Cambridge, voted bonds Nov. 6, school expansion program. $1,365,000. CD 9/25.

▲ **O., Cincinnati**—SCHOOL—Oak Hill School Dist., 3900 Race Rd., voted bonds Nov. 6, high school $2,750,000. George Schatz & Assoc., 309 Ludlow Ave., archts. CD 7/20.

▲ **O., Cincinnati** — UNIVERSITY IMPRVS. — City, City Hall, voted bonds Nov. 6, University of Cincinnati imprvs. $1,600,000. CD 10/16.

▲ **O., Cleveland**—MUNICIPAL COURT—City, City Hall, Zone 14, defeated bonds Nov. 6, municipal court bldg. $2,700,000. Anthony Gattozzi, city archt. CD 7/2.

▲ **O., Elyria** — COUNTY — Comrs.—Lorain Co., Court House, voted $3,000,000 bonds Nov. 6, county bldg. Don E. Patterson, co. engr. CD 5/31.

▲ **O., Ironton**—SCHOOLS—Bd. Educ., Ironton, voted $2,200,000 bonds Nov. 6, schools. CD 10/30.

▲ **O., Lakewood**—MUNICIPAL—City, 14532 Lake Ave., Zone 7, defeated bonds Nov. 6, municipal bldg. $1,500,000. Garfield, Harris, Robinson & Schafer, 1740 E. 12 St., Cleveland, Zone 14, archts. CD 7/2.

▲ **O., Parma**—SCHOOLS—Bd. Educ., 5401 W. 54 St., Zone 29, voted bonds Nov. 6, schools. $3,200,000. CD 7/2.

▲ **O., Sidney**—HIGH SCHOOL—Bd. Educ., Sidney, voted bonds Nov. 6, high school, west of Shelby Co. Fairgrounds $2,000,000. CD 6/27.

▲ **O., Wapakoneta**—HIGH SCHOOL—Bd. Educ., Wapakoneta, voted $1,300,000 bonds Nov. 6, high school. $1,600,000. Sullivan-Isaacs-Sullivan & Assoc., 1800 Reading Rd., Reading, archts.-consult. engrs. CD 7/9.

▲ **O., Washington Court House**—HIGH SCHOOL—Bd. Educ. Miami Trade School Dist., Washington Court House, voted bonds Nov. 6, high school, corner Rte. 70 and Bloomingburg-New Holland Pike. $1,652,500. CD 6/27.

▲ **O., Youngstown**—SCHOOLS—Bd. Educ., Youngstown, voted bonds Nov. 6, schools, $5,460,000. CD 6/27.

▲ **Pa., Glenshaw**—SCHOOL—School Dist. of Shaler twp., plans by Trefry Eng. Co., Box 736 Rd. 4, Butler, 1 story, brick, block Junior High School, Scott Rd. Shaler Twp. $1,250,000.

▲ **Pa., Schwenksville** — SCHOOLS — Schwenksville Area Joint School Auth., plans by John S. Carver, 2112 Spruce St., Phila., new Junior-Senior High School, and alterations to high school, $1,000,000; elementary school, $344,000.

▲ **R. I., Exeter**—SCHOOL—State of Rhode Island, State Office Bldg., Providence, voted $1,750,000 bonds Nov. 6, Exeter School for Mentally Retarded Children. CD 10/26.

▲ **R. I., Kingston**—BUILDING—State of Rhode Island, State Office Bldg., Providence, voted $5,000,000 bonds Nov. 6, buildings and roads, University of R. I. CD 10/26.

▲ **R. I., Providence**—CAMPUS—State of Rhode Island, State Office Bldg., Providence, voted $1,600,000 bonds Nov. 6, campus for State College of Education. CD 10/26.

▲ **R. I., Providence**—SCHOOL—City, City Hall, voted $1,250,000 bonds Nov. 6, elementary school and $1,000,000 for altering schools. CD 10/26.

▲ **Tex., Odessa**—HIGH SCHOOL—Ector County Independent School Dist., Odessa, plans by Wilson, Patterson & Assocs., 601 Bailey St., Fort Worth, high

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The D. W. Winkelman Company used Dumpcretes for the *fourth* time to haul and place 132,000 cu. yds. of concrete for both paving and structures—on contracts of $9,900,000 covering a ten-mile section at Dunkirk and a six-mile section at Ripley.

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Vacuator installation at Kalamazoo and aerial view of the complete plant.
Consulting Engineers: Jones, Henry, & Williams, Toledo, Ohio.
Joint Contractors: C. & C. Construction Co., Inc., and Clifton Engineering Company of Michigan, Inc.

KALAMAZOO MICHIGAN ... uses a DORRCO VACUATOR for Primary Treatment ... and Chemical Precipitation to meet the seasonal fluctuations of the Kalamazoo River

The 45′ dia. Dorrco Vacuator at the new sewage treatment plant at Kalamazoo is the first major unit of its type in that area. This unique plant flowsheet combines primary treatment with separate sludge digestion . . . with special provisions for chemical precipitation of the Vacuator effluent when a greater degree of treatment is desired.

Other D-O equipment at Kalamazoo includes two Dorrco Flocculator units in basins 54′ x 27′, two 85′ dia. Clarifiers, and two 70′ Dorr Multdigestion Systems.

If you would like more information on the complete line of Dorr-Oliver sewage treatment equipment write to Dorr-Oliver Incorporated, Stamford, Connecticut, for Bulletin No. 6041.

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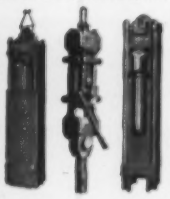

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school. $1,300,000. CD 12/8/55, under Odessa Independent School Dist., as owner.

▲ **Wash., Seattle**—CONCERT, etc.—City, County-City Bldg., Zone 4, voted bonds Nov. 6, 3,500 seat concert and convention hall, and 800-seat multi-purpose bldg. for civic center. $7,500,000. CD 7/20.

▲ **Wash., Seattle**—SCHOOLS—School Dist. No. 1, 815 4 Ave. N., Seattle, voted $25,000,000 bonds Nov. 6, Ballard, Franklin and Lincoln High Schools addns., $1,000,000 each; 3 Junior High Schools at Olympic Gulf coucse in Southeast Seattle and at Bitter Lake, $2,500,000 each; Woodrow Wilson Junior High School addn. $750,000; Roxhill Elementary School $700,000; 5 elementary schools at Rainier View, Sand Point, Victory Heights, Schmitz Park and Cedar Park $625,000 each; 2 elementary schools at West Broadview and North View Ridge, $600,000 each; Harrison, Pinehurst, Arbor Heights and Whitworth Schools addns., $400,000 each. CD 9/6.

COMMERCIAL BUILDINGS

▲ **Fla., Coral Gables**—HOTEL—Douglas Development Co., Collins Hay, vice pres., E. Ponce De Leon Blvd., hotel, 2 8-story bldgs., 145 rooms, 70 apartments, Douglas Rd. entrance to Coral Gables, $3,500,000.

▲ **Ill., Springfield**—YMCA BLDG.—Young Men's Christian Assn., 317 S. 7 St., plans by M. D. Turley, 526, South 7th St., YMCA bldg. $1,750,000. CD 2/7/55.

▲ **N. J., Pennsauken**—SHOPPING CENTER—American Shopping Centers, Inc., 1801 Nicollet Ave., Minneapolis, Minn., 1 story, 400,000 sq. ft., brick, concrete, block shopping center $5,000,000.

▲ **N. J., Secaucus**—OFFICES, etc.—Lerner Shops, 354 Fourth Ave., New York, N. Y., 400,000 sq. ft executive offices and central warehouse, County Ave. Exit 17 on N. J. Turnpike 17-acre tract, $1,500,000.

▲ **N. Y., Brooklyn**—GERIATRICS CENTER—Brooklyn Hebrew Home & Hospital for Aged, 813 Howard Ave., plans by Charles B. Meyers Assocs., 31 Union Square, New York, 6 story geriatrics center, Grafton St., Dumont and Livonia Aves. $3,000,000.

▲ **Pa., Essington**—OFFICE, etc.—Scott Paper Co., Front and Market Sts., Chester, plans by Welton Becket & Assoc., 5627 Wilshire Blvd., Los Angeles, Calif., office and administration bldg. $4,500,000. CD 8/14.

▲ **Pa., Phila.**—RADVIN INSTITUTE—University of Penn. Corp., 209 S. 36 St., plans by Schmidt Garden & Erikson, 104 S. Michigan Ave., Chicago, Ill., Dr. I. S. Radvin Institute, $3,500,000. CD 10/21/54.

▲ **Tex., Beeville**—HOUSING—Officer in Charge of Constr., 8th Naval Dist., Bldg. 16, Naval Station, New Orleans, La., plans by Milam & Roper, 368 Casa Linda Plaza, Dallas, construct and finance, 225 housing units, Chase Naval Air tation. $3,250,000. Reaves & Gregory, 332 W. 7th St., Fort Worth, consult. engrs. CD 10/3, under Beeville Housing Auth., Beeville, Tex., as owner.

▲ **Tex., Dallas**—OFFICES—Southland Life Insurance Co., Southland Life Bldg., plans by Welton Becket & Assocs., archts.-consult. engrs., 5657 Wilshire Blvd., Los Angeles, Calif. and Mark Lemmon, Thomas Bldg., 2 office towers bldg., 20 and 25 stories each, incl underground parking garage 225,000 sq. ft., 175,000 sq. ft. retail store and shop, $5,000,000; 42 story home office, $12,000,000. CD 1/18/54.

▲ **Tex., San Antonio**—SHOPPING CENTER—Terrell Plaza, c/o Marmon-Mok, 612 S. Texas Bldg., and Jerry Rogers, 2002 N. St. Mary St., archts., project abandoned, site sold, shopping center, $1,500,000. CD 6/12.

INDUSTRIAL BUILDINGS

▲ **Calif., Wilmington**—PLANT—Union Oil Co., 617 W 7 St., Los Angeles, plant to manufacture 100 million lbs. ethylene per year. $20,000,000. To be completed in 1958.

▲ **Conn., New Haven**—TERMINAL—Adley Express Co., Inc., 216 Crown St., plans by Leo F. Caproni, 132 Temple St., 1 story, 120,000 sq. ft. motor freight terminal, $1,500,000. CD 9/19/50.

▲ **Conn., Stratford**—LABORATORY, etc.—Sikorsky Aircraft Div., United Aircraft Corp., N. Main St., 433,200 sq. ft. plant addn. for engineering and service personnel, laboratory, etc. $4,000,000.

▲ **Ill., Waukegan**—PLANT—National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y., gypsum bldg. projects plant, docks and harbor imprvs. $6,000,000.

UNCLASSIFIED

▲ **Md., Baltimore**—OFF STREET PARKING FACILITIES—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, voted bonds Nov. 6 off street parking facilities. $5,000,000. CD 9/17.

▲ **O., Cleveland**—IMPROVEMENTS—City, City Hall, Zone 14, voted bonds Nov. 6, improvements needed for Pan-American games. $1,500,000. CD 7/24.

▲ **O., Parma**—PARK IMPRVS.—City, City Hall, 6611 Ridge Rd., Cleveland, Zone 29, voted bonds Nov. 6, park imprvs. $1,500,000. CD 10/16.

▲ **Tex., Houston**—STADIUM, etc.—Houston Ind. School Dist., 1300 Capitol St., plans by Milton McGinty, 2425 Ralph St., 17,000 seating capacity stadium and field house. $1,750,000. CD 5/22.

▲ **Wash., Tacoma**—WATERWAYS—Port of Tacoma, Portacoma Rd., voted bonds Nov. 6, dredging and completion of Hylebos waterway, dredging on pioneer channel in Port Industrial waterway and development of facilities on Sitcum waterway. $5,400,000. CD 9/20.

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NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Dedham**—MANUFACTURING—BA 11/29—Allied Container Corp., 1715 Hyde Park Ave., Hyde Park, mfg. bldg., off Rte. 128. $2,000,000. Plans deposit $100, refundable. Sumner Schein, 271 Huntington Ave., Boston, archt.

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Bayer & Mingolla Constr. Co., Inc., 550 Park Ave., Worcester, Mass. LB **$1,760,300.** hy. and bridge at Chelmsford-Lowell, Rte. 3, Proj. F 315 (8). Bids Nov. 14. CD 10/30.

▲† **The Arundel Corp.**, Pier 3, foot of Fulton St., Brooklyn, N. Y. LB **$1,710,000**, est. $1,380,000. Impry. dredging Fall River Harbor, Fall River, CIVENG-19-016-57-29, MASSACHUSETTS. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Nov. 9. CD 10/24.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 6 New York — December 7 Pennsylvania

STREETS AND ROADS

December 6 New York — December 7 Pennsylvania

▲ **Pa., Phila.**—BA 11/29—U. S. Eng., 2635 Abbottsford Rd., Phila., storm drainage, sys., pumping station, Frankford Arsenal, ENG-36-109-57-12, $3,000,000, Harris Dechant Associates, 123 S. Broad St., engrs. CD 7/27.

BUILDINGS—BA

▲ **N. Y., New York**—SCHOOL—BA 12/5—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, P. S. 123, Edgecombe to 8th Aves., West 140 to W. 141 Sts., Manhattan Boro, $3,093,950. Plans deposit $25 general constr., $10 each for plumbing and drainage, heating and ventilating, electrical work and lighting fixtures.

▲ **N. Y., New York**—SCHOOL—BA 12/11—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, J. H. S. 142, Baychester Ave., E. 233 St., The Bronx, $4,219,100. Plans deposit $25 general constr., $10 each for plumbing and drainage, heating and ventilating, electric work and lighting fixtures. CD 1/20/55.

▲† **N. J., Fort Dix**—HOSPITAL—BA 12/19—U. S. Eng., 2635 Abbottsford Rd., Phila. 29, Pa., 500-bed hospital, $7,500,000.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—John W. Johnson, supt. Pub. Wks. Dpt., The Gov. Alfred E. Smith State Office Bldg., Albany,
Poirier & McLane Corp., 33 West 42nd St., New York 18, N. Y., LB **$3,484,167**, Est. $3,602,000 (3 bidders) constr. 16-span, 1,262 ft. long Byram River interstate Bridge and its approaches connecting the State Thruway's 15 mi. New England Sect. with Connecticut Turnpike now under constr., bridge will carry six travel lanes, involving 0.39 mi., Westchester Co. (and Fairfield Co., Conn.). Bids Nov. 15. CD 10/19;

▲ **NEW YORK**—John W. Johnson, supt., P. Wks. Dpt., The Gov. Alfred E. Smith State Office Bldg., Albany, No bids received 11/15/56, est. **$3,742,000** constr. 1.41 mi. six-lane divided portion of State Thruway's Niagara Section from Rossler St. near the Triple Interchange on outskirts of Buffalo, westward to Clinton St. in Buffalo, incl. will be the constr. 2.27 mi. of access roads and building of three structures, Erie Co.

N. Y.—**Union Building and Construction Corp.**, Passaic, N. J., LB **$8,022,299**, est. $8,030,000 (1 bidder) constr. 4.57 mi. four-lane divided segment of State Thruway's Niagara Section from Ontario St. in Buffalo northwestward to South Grand Island Bridge, incl. constr. 5.53 mi. of access roads, eight structures, Erie Co.

N. Y.—**Lane Construction Corp.**, 965 East Main St., Meriden, Conn., LB **$2,435,440**, est. $2,674,000. (6 bidders) constr. 2.7 mi. four-lane divided sect. of Rochester's Eastern Thruway Connection, starting at Fairport Rd. and exten. northwestward to Landing Rd. generally following the alignment of abandoned Rochester, Syracuse and Eastern trolley line, incl. constr. of 3.57 mi. of access roads, traffic interchange facilities leading to East Rochester, Monroe Co.

N. Y.—**Tully & DiNapoli, Inc.**, 125-50 Northern Blvd., P. O. Box 145, Flushing, N. Y., LB **$6,555,125**, est. $6,981,000 (4 bidders) constr. 0.86 mi. six-lane divided sect. of Horace Harding Expressway (Rte. 25D) and 3.03 mi. of access roads from Grand Central Parkway to 136 St. incl. 3 bridges and one pedestrian overpass, Queens Co.

N. Y.—**Hudson River Construction Co., Inc.**, 75 State St., Albany, N. Y., LB **$1,249,379**, est. $1,351,000 (3 bidders) wid'n., strengthening 4.03 mi. sect. of Rte. 9 and 20, starting just southeast of Rte. 4 and 40 intersection northwest of East Greenbush and exten. southeastward through East Greenbush and Schodack Center to Rices Corners, then south on Rte. 9 for about ½ mi. existing 27 and 36 ft. wide road will be widened to a minimum of 46 ft. width and resurf. with b. conc., Rensselaer Co.

N. Y.—**Twin Village Construction Corp.**, 166 Gould Ave., Depew, N. Y., LB **$306,270**, est. $315,000 (4 bidders) resurf. with b. conc. of County Rd. 7, 26 and 60 starting in village of Frewsburg and exten. northeastward for 2.46 mi., Chautauqua Co. Bids Nov. 15. CD 10/19.

▲ **McKiernan-Terry Corp.**, 313 Manor Ave., Harrison, N. J. LB **$2,253,100**. (3 bidders) Contr. 2974, modernization of bridges of slips Nos. 1, 2 and 3, Whitehall Street Ferry Terminal, Manhattan Boro, NEW YORK, N. Y. Comr., Marine & Aviation, Pier 1, North River 4, N. Y. Bids Nov. 9. CD 10/31.

BUILDINGS—LB & CA

▲ **Christensen & Nielsen**, 422 Liberty St., Schenectady, N. Y. CA **$1,645,736**. Central SCHOOL and BUS GARAGE, CORINTH, N. Y. Bd. Educ., Corinth Central School Dist., Corinth, N. Y. CD 11/12, under LB.

▲ **Lasker-Goldman Corp.**, 50 E. 42 St., New York 17, N. Y. CA **$2,775,000**. SENIOR HIGH SCHOOL, McKay Ave. and Oakwood Rd., HUNTINGTON, N. Y. Bd. Educ., Union Free School Dist. 3, town of Huntington, Huntington, N. Y. CD 10/1, under LB.

▲ **Streeter Associates, Inc.**, East Woodlawn Ave., Elmira, N. Y. CA **$2,908,670**. OFFICE, ITHACA, N. Y. National Cash Register Co., S. Main and K Sts., Dayton, O. Bids Oct. 18. CD 10/15.

▲ **Caristo Constr. Co.**, 26 Court St., Brooklyn 2, N. Y. LB **$3,050,000**. (7 bidders) general constr. JUNIOR HIGH SCHOOL, 13, Fifth Ave., 106 and 107 Sts., Manhattan, NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, N. Y. Frederick G. Frost Jr. & Assoc., 144 E. 30 St., New York, N. Y., archts.

▲ **St. James Estates Homes**, c/o Donald G. Patrick, archt., 11 Cannon Court, Huntington, N. Y. Owner Builds. **$2,400,000**. 200 HOUSES on tract at Moriches Rd. south of Rte. 25A, ST. JAMES, N. Y.

▲ **Strausman Constr. Co.**, 25 Great Neck Rd., Great Neck, N. Y., Separate Contracts. **$9,600,000**. RESIDENTIAL DEVELOPMENT, BURLINGTON, N. J.

▲ **Princeton Country Estates**, 470 Georges Rd., New Brunswick, N. J., Separate Contracts. **$5,670,000**. 189- unit RESIDENTIAL DEVELOPMENT, also roads, water and sewer lines, PRINCETON, N. J.

▲ **Philip S. Seltzer**, Western Savings Fund Bldg., Phila., Pa. Separate Contracts. **$3,000,000**. RESIDENTIAL DEVELOPMENT, Limekiln Pike, FORT WASHINGTON, PA.

▲ **Koppers Eng. & Constr. Div., Koppers Co., Inc.**, Koppers Bldg., Pittsburgh 19, Pa. CA PLANT to produce "Dylite" expandable polystyrene beads, KOBUTA, PA. Koppers Co., Inc., Koppers Bldg., Pittsburgh 19, Pa. CD 3/19/51.

San Francisco overpass has center span of 35 feet and outer spans of 30 feet. Width is 32 feet. Deck is laminated 2x12's on edge, supported by 6 equally spaced glulam girders. Engineering by J. Y. Long Company, Oakland, California. Contractor: Utah Construction Company of South San Francisco. Lamination, fabrication and erection by Timber Structures, Inc.

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▲ **Marilyn Park, Inc.**, c/o F. Joseph Croolick, 1411 City Line Ave., Phila., Pa. Separate Contracts. **$1,860,000**. RESIDENTIAL DEVELOPMENT, Lawrence Rd., MANOA, PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

▲ **J. D. Hedin Constr. Co.**, 2900 Newton St. N. E., Wash., D. C. LB **$3,158,000**. (6 bidders) North Hagerstown HIGH SCHOOL, HAGERSTOWN, MD. Washington Co. Bd. Educ., Court House, Hagerstown, Md. Bids Nov. 13. CD 11/5.

SOUTH

BUILDINGS—BA

▲ **Ga., Atlanta**—COMMUNICABLE DISEASE CENTER—BA 12/20—General Services Admin. P. Bldg. Serv., Regional Office, 50 Seventh St. N.E., Atlanta, Ga., lease-purchase project, communicable disease center. $12,300,000. CD 10/31, under LB, Public Buildings.

▲ **W. Va., Huntington**—OFFICE—BA 12/20— General Services Admin., P. Bldg. Serv., General Services Bldg., Wash. 25, D. C., lease-purchase project, federal office bldg. $2,979,000. Extended date. S. E. Silling & Assocs., 314 Masonic Temple Bldg., Charleston, W. Va., archts. CD 10/8, under Public Buildings.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—The Richmond-Petersburg Turnpike Auth., 1015 E. Main St., Richmond, Zone 2,
Villa Contg. Co., Inc., 233 North Avenue, Westfield, N. J. CA **$2,447,634**, Contr. C-1-G, Sect. C, grading, drainage, paving and structures from point 1,800 ft. north of Rte. 10 to point 3,900 ft. north of Rte. 656, Chesterfield Co. Bids Oct. 30. CD 11/1, under LB.

BUILDINGS—LB & CA

▲ **Foster & Creighton Constr. Co.**, Box 2366, Knoxville, Tenn., CA **$2,000,000**. MFG. PLANT addn., WAREHOUSE, OFFICE and MFG. facilities, KNOXVILLE, TENN. Foote Mineral Corp., Proctor and Lorraine Sts., Knoxville, Tenn., and 18 W. Chelten Ave., Phila., Pa. James T. Mitchell, 716½ Gay St., Knoxville, Tenn., archt. Patchen & Zimmerman, 525 Telfair St., Augusta, Ga., engrs. Bids Oct. 25. CD 10/4.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

November 27 Ohio

▲ **O., Columbus**—TERMINAL BLDG.—BA 12/11—City, City Hall, terminal bldg., Port Columbus Airport. $3,000,000. Extended date. CD 10/9.

▲ **O., Warren**—BA 12/12—Comrs. Trumbull Co., Court House, water sys. to serve Hubbard and Liberty Twps., incl. 1 m. g. storage tank and two 500,000 gal. standpipes. $2,750,000. Snyder, McLellan, Welsh & Weinberg, Hillsboro, Ind., engrs. CD 8/12/55.

BUILDINGS—LB & CA

▲ **Wilputte Coke Oven Div., Allied Chemical & Dye Corp.**, 61 Broadway, New York, N. Y. CA Est. **$9,000,000**. 76 oven byproducts COKE BATTERY at Campbell Works, CAMPBELL, O. Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, O. Awarded Nov. 7. CD 11/29/54.

▲ **Leo W. Schmidt Co.**, 9920 Granger Rd., Cleveland, O., CA, excavation and foundation work for STORE at Southgate Shopping Center, CLEVELAND, O. Total est. **$5,000,000**. Wm. Taylor & Son Co., 630 Euclid Ave., Cleveland 14, O. CD 5/10.

▲ **The H. K. Ferguson Co.**, 1783 E. 11 St., Cleveland O. CA **$12,000,000**. design and construct 300,000 sq ft. DRILL MFG. PLANT, RICHMOND, IND. Bucyrus-Erie Co., 1100 Milwaukee Ave., Milwaukee, Wis. CD 11/15.

▲ **Rose Hill Builders**, 13324 W. Seven Mile Rd., Detroit 35, Mich. CA Est. **$12,500,000**. Westbrook Gardens, 875 brick HOMES, Ann Arbor Trail, west of Merriman Rd., DEARBORN, MICH. Rose-Hill Realty, 17300 Grand River, Detroit 27, Mich.

▲ **Cambridge Constr. Co.**, 22022 Woodward Ave., Ferndale, Mich. and **Paul R. Lowell**, 302 Gardenia St., Royal Oak, Mich. CA Est. **$2,700,000**. Golf View Estates Development, 95 HOMES, Lake Angelus, Wormer Lake and Mohawk, PONTIAC, MICH. Gordon Williamson Co., 19180 Grand River, Detroit 23, Mich.

▲ **William F. Foster**, 20114 Fairway Dr., Grosse Pointe Woods, Mich. CA Est. **$5,250,000**. Crouchez Farms Development, 250 brick ranch HOMES, Violet, Harper, Evergreen south of 13 Mile Rd., ST. CLAIR SHORES, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 29 Kansas

STREETS AND ROADS

November 29 Kansas

BUILDINGS—BA

▲ **Iowa, Council Bluffs**—COURT HOUSE and POST OFFICE—BA 12/20—General Services Admin., P. Bldgs. Service, 2306 E. Bannister Rd., Kansas City, Mo., lease-purchase project, court house and post office. $1,630,000. CD 10/9, under LB, Public Buildings.

▲† **Kan., Kansas City**—POST OFFICE—BA 12/20—General Services Admin., 2306 E. Bannister Rd., Kansas City, Mo., post office and federal bldg., Seventh and Ann Sts. $1,930,000. J. W. Radotinsky, 1401 Fairfax Trafficway, Kansas City, Kan., archt.

▲ **N. M., Albuquerque**—OFFICE—BA 12/20—General Services Admin., Denver Federal Center, Denver, Colo., lease-purchase project, 8 story, 142x300 ft., concrete, steel federal office $5,575,000. Extended date. CD 10/26, under Public Buildings.

▲ **Tex., El Paso**—HOUSING—BA 1/21—Purchasing Office, Fort Bliss, El Paso, construct and finance, 490 units of combined frame-masonry constr., incl. outside utilities, telephones, Capehart Housing. Fort Bliss. $5,000,000-$10,000,000. CD 4/25.

BUILDINGS—SLC

▲ **Tex., Mission**—POWER PLANT—Central Power & Light Co., 120 Chaparral St., Corpus Christi, soon lets contract electric power plant, $6,500,000; power lines, $200,000; area earthwork, grading, $50,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill., engrs. CD 11/1.

BUILDINGS—LB & CA

▲ **Linbeck Constr. Corp.**, Box 13007, Houston, Tex., LB **$1,910,000**, four BUILDINGS, (1) fine arts center, (2) high school auditorium, (3) Junior High School, (4) elementary school, HOUSTON, TEX. Kinkaid Preparatory School, 1301 Richmond St., Houston, Tex. Bids Nov. 2. CD 11/12, under LB.

▲ **Pusey & Jones Corp.**, Front and Popular Sts., Wilmington, Del., CA **$3,000,000**, furnish, install machinery for expansion of NEWSPRINT PRODUCTION PLANT, LUFKIN, TEX. Southland Paper Mills, Inc., Lufkin, Tex. CD 8/7.

▲ **Stone & Webster Engineering Co.**, 90 Broad St., New York, N. Y., CA ETHYLENE UNIT, PORT NECHES, TEX. Total est. **$35,000,000**. Jefferson Chemical Co. (American Cyanamid Co. and Texas Co.), 260 Madison Ave., New York, N. Y. CD 11/15.;
Singmaster & Breyer, 420 Lexington Ave., New York, N. Y., CA CHLORINE PLANT (Port Neches, Tex.).
C. F. Braun Co., 1000 S. Fremont Ave., Alhambra, Calif., CA SPECIAL AMINES PLANT and outside battery limit facilities (Port Neches, Tex.).

▲ **Lembke-Clough & King Inc.**, 1013 Arcturus Dr., Colorado Springs, Colo., CA, **$6,463,069**, general contract 12 story Glockner-Penrose HOSPITAL, COLORADO SPRINGS, COLO. Sisters of Charity of Cincinnati, N. Cascade Ave., Colorado Springs, Colo. Bids Oct. 31, awarded Nov. 3. CD 11/8, under LB.

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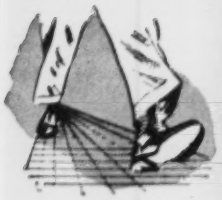

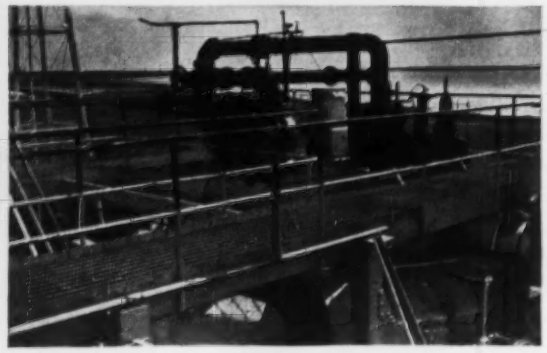

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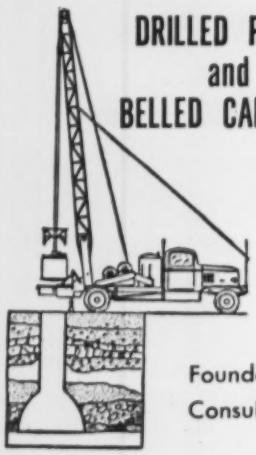

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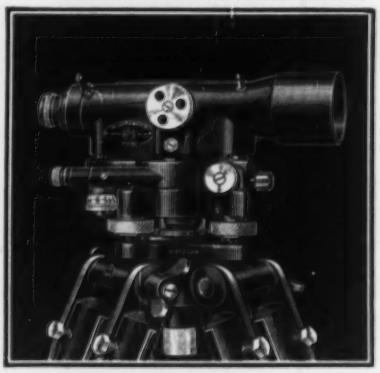

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DIETZGEN

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
December 4 Washington December 12 California
STREETS AND ROADS
November 29, December 6 Nevada
December 4 Idaho, Washington
December 12, 19 California

▲ Wash., Moses Lake—HANGAR—BA 12/28—Boeing Airplane Co., Engineering Bldgs., Seattle, Wash., Construction Package No. 9, two-place hangar, incl. earthwork, paving, utilities and misc. items of work, Moses Lake Flight Center, Larson Air Force Base, Grant Co. Naramore, Baine, Brady & Johanson, 904 Seventh Ave., Seattle, Zone 4, archts.-engrs. CD 11/7, under LB.

BUILDINGS—BA

▲ Wash., Kenmore—SEMINARY—BA 12/11—Archdiocese of Seattle, 904 Terry St., Seattle, general contract for St. Thomas Seminary buildings. $2,000,000. J. W. Maloney, Central Bldg., Seattle, archt. (Correction—status). CD 11/8, under CA.

HEAVY CONSTRUCTION—LB & CA

▲† U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., rejected bids Oct. 23, reconstr. 150x7,000 ft. runway 2-20 with b. conc., constr. two 150x1,000 ft. c. conc. extens., Geiger Air Force Base, ENG-45-108-57-34, SPOKANE, WASH. LB $2,395,180. CD 10/26, under LB.

▲ CALIFORNIA—State Div. Hys., 1120 N St., Sacramento,
Charles L. Harney, Inc., 575 Battery St., San Francisco, Calif., LB $7,075,009, est. $7,800,000 (5 bidders) portions of multi-lane separation structure between Howard St. and Broadway on Embarcadero, 2 level structure to be composed of rein.-con. box girder spans for minimum of 4 traffic lanes on each level in San Francisco, San Francisco Co. Bids Nov. 14. CD 10/5.

▲† Griffith Co., 1060 S. Broadway, Los Angeles, Calif. CA $5,142,819, Los Angeles River Imprvt., 63 St. to below Dominguez, Los Angeles Area, Los Angeles Co., CIVENG-04-353-57-10, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 25, awarded Nov. 2. CD 10/31, under LB.

BUILDINGS—LB & CA

▲ Swinerton & Walberg Co., 200 Bush St., San Francisco, Calif., CA $2,500,000. PLANT, incl. refrigeration and egg candling facilities and office area, SAN LEANDRO, CALIF. Poultry Producers of Central California, 840 Battery St., San Francisco, Calif. Bids Nov. 2. CD 11/12, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 28 Ontario

▲ QUEBEC—BA 11/27—St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont.
Beauharnois—Valleyfield vertical lift bridge over ship channel, Beauharnois Canal, Soulanges Section.
St. Louis vertical lift bridge over ship channel, Beauharnois Canal, Soulanges Section of St. Lawrence Seaway. Former bids rejected. CD 10/29, under LB.

BUILDINGS—LB & CA

▲ Canadawide Investments, Ltd., 330 Bay St., Toronto, Ont., cancelled contract steel framed OFFICE BLDG. and rein.-con. parking GARAGE, 188 University Ave., TORONTO, ONT. CA $2,000,000. CD 11/12, under CA.

▲ Redfern Constr. Co., Ltd., 36 Toronto St., Toronto, Ont., CA Est. $5,000,000. 12 story, 2 bsmnts rein.-con. OFFICE and underground parking, University Ave., TORONTO, ONT. Migros Ont. Ltd., and Canadian Co. Ltd., c/o L. Forster, archt., 77 York St., Toronto, Ont. Bids Aug. 10, awarded Nov. 6. CD 8/2.

▲ Anglin-Norcross Quebec Ltd., 892 Sherbrooke St. W., Montreal, Que. CA, $9,194,895. FEDERAL BLDG., Dorchester and Bleury Sts., MONTREAL, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Awarded Nov. 2. CD 9/6, under LB.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ Williams Bros. Constr. Co., 3311 Montrose Blvd., Houston 6, Tex., U. S. A. CA 230 mi. 20 in. oil pipe line and terminal from fields in southwest state of Barinas to Puerto Cabello on the Caribbean seacoast, incl. installing 200,000 bbl. per day diesel centrifugal pumping station, four 150,000 bbl. capacity steel storage tanks; five 268,000 bbl. tanks, VENEZUELA. Total est. $24,600,000. Socony-Vacuum Co. and Sinclair Oil & Refining Co., Caracas, Venezuela. CD 6/11; Morrison-Knudsen Co., 150 E. 42 St., New York 17, N. Y., U. S. A. and J. Rich Steers, 17 Battery Pl., New York 4, N. Y., U. S. A. CA 2,300-ft. loading pier at Puerto Cabello, electric power plant to serve Barinas oilfield installations (Venezuela).

(Proposal Advertisements see pp. 86 to 88)

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DALLAS (1)...1219 Praetorian Bldg.
SEATTLE .....522 Lane Street
SANTA CLARA, CAL., 621 Alviso Road
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HOW USS "T-1" STEEL IMPROVES THESE PRODUCTS:

Pays Off In Payloader. Speed is emphasized in International Harvester's new Model 12 Payloader. That means weight had to be cut. And USS "T-1" Steel helped cut weight of the rugged boom. This remarkably tough, strong steel is used at top and bottom sides where maximum stresses are imposed. The section depth of the USS "T-1" Steel parts is 12 inches. With other, less strong steels, section depths of 19 and 24 inches would have been required —much too large to fit the contour of the machine. USS "T-1" Steel cut size, weight . . . was cold bent, and welded to other parts of the machine by automatic submerged arc welding.

Stops Brake Breakage. Columbiana Cylinder Grinding Company, Columbiana, Ohio, does a lot of custom machining on industrial and mining equipment, including repair of brake and clutch bands for large earthmoving equipment. On the original equipment these bands are made of plain mild steel . . . often break under the tremendous stresses encountered. Columbiana replaces broken bands with new ones of USS "T-1" Steel—has yet to have a USS "T-1" band break.

More Strength, Less Weight. This lift truck, in use at Baltimore Concrete Plank Corporation, and manufactured by Gerlinger Carrier Company, Dallas, Oregon, is the largest standard-line lift truck on pneumatic tires in the world. USS "T-1" Steel reduced the width and thickness of the forks on this truck. In addition, this extremely tough constructional alloy steel eliminated the need for shipping the forks 75 miles for heat treatment, which was required with the alloy steel previously used.

HOW IT CAN HELP YOU

USS "T-1" Steel, with its high minimum yield strength of 90,000 psi and its minimum tensile strength of 105,000 psi, can help you design or build lighter-weight equipment that will last longer. Its unusual toughness can help you design or build equipment capable of taking severe impact and abuse at sub-zero temperatures. Its excellent weldability can help you cut the cost of fabricating highly stressed parts, and reduce repair and maintenance expense. Its good creep rupture strength can help you put more durability in equipment that operates at temperatures as high as 900 degrees F.

Somewhere in your operation, versatile USS "T-1" Steel can help you. For technical assistance or information, write, wire, or phone United States Steel, Pittsburgh 30, Pa.

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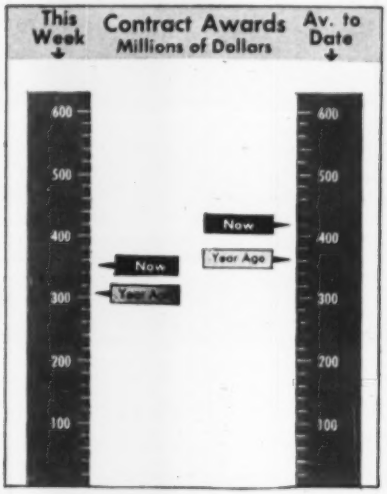
USS

UNITED STATES STEEL

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 47 wks 1956	Chge %
	millions		
Federal	$17.5	$1,551.4	+1
State and Municipal	90.2	5,930.9	+25
Total Public	107.7	7,482.3	+79
Total Private	249.9	12,262.3	+14
U. S. Total	$357.6	$19,744.6	+16
By Type of Work			
Waterworks	$4.4	$323.3	+33
Sewerage	3.5	538.7	+53
Bridges	9.4	566.2	+28
Highways	30.0	2,248.8	+16
Earthwork, Waterways	11.6	673.0	+36
Buildings:			
Public, Excl. Housg.	42.2	1,886.7	+22
Public Housing	0.9	289.4	+21
Private Housing	78.3	5,001.0	−12
Commercial	48.0	1,754.4	+13
Industrial	121.6	4,828.3	+83
Unclassified	7.7	1,634.8	−13
U. S. Total	$357.6	$19,744.6	+16

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

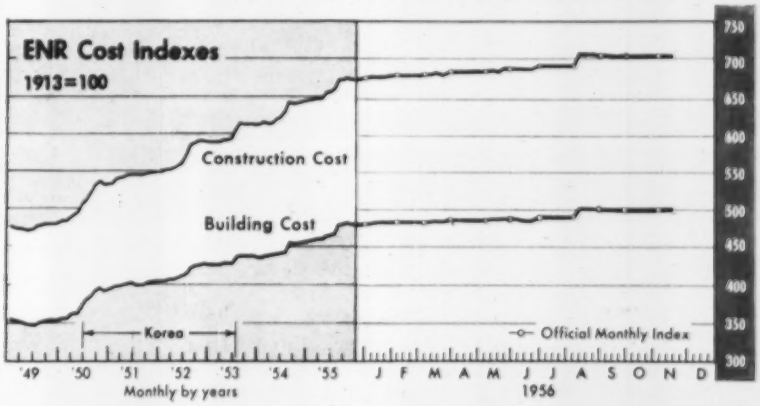
NEW CAPITAL FOR CONSTRUCTION

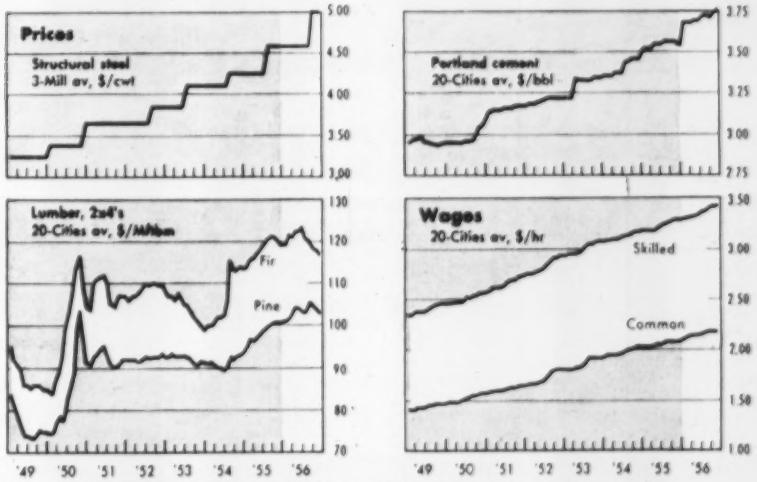
	Week of Nov. 15	Cum. 46 wks 1956	Chge '55-'56 %
	millions		
Corporate Securities	$19.7	$4,280.6	+32
State and Municipal:			
All Except Housing	42.7	4,129.1	−1
Housing	0.4	91.1	−2
Federal Loans	...	134.0	+11
Federal Aid	...	1,070.0	+25
Total Nonfederal	$62.8	$9,704.7	+14
Federal Appropriations:			
In U. S.	$...	$3,460.3	+2
Outside U. S.	...	15.9	−81
Total New Capital	$62.8	$13,180.9	+10

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Nov. 15 1956	% Change from Oct. 18 1956	% Change from Nov. 17 1955
Construction Cost	703.89	−0.03	+4.6
Building Cost	500.24	+0.1	+4.5

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.857.
To convert above indexes to 1949 = 100: Divide Construction Cost by 1.770; Building Cost by 3.518.





ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Nov. 1956	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Nov. 1956	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	522	0	+5.5	441	0	+5.3
Baltimore	602	0	+0.8	498	0	+4.4
Birmingham	553	−0.6	+5.5	455	−0.8	+3.0
Boston	747	+0.4	+5.5	509	+0.6	+4.8
Chicago	792	0	+4.1	507	0	+4.6
Cincinnati	715	0	+6.6	491	0	+5.5
Cleveland	819	−0.5	+4.4	508	−0.8	+3.9
Dallas	534	0	+4.7	449	+0.6	+5.4
Denver	696	+2.4	+6.7	519	+3.2	+7.4
Detroit	808	0	+4.4	527	0	+5.2
Kansas City	716	0	+1.9	505	+0.2	+1.8
Los Angeles	731	−0.3	+3.0	493	−0.4	+2.6
Minneapolis	757	0	+5.2	526	0	+4.8
New Orleans	564	−0.2	+3.5	464	+0.8	+3.2
New York	845	0	+6.4	571	0	+4.2
Philadelphia	747	0	+3.7	549	0	+2.6
Pittsburgh	727	0	+4.6	533	0	+5.3
St. Louis	759	−0.3	+4.1	525	−0.4	+4.3
San Francisco	723	−0.2	+5.7	488	+0.9	+5.4
Seattle	724	0	+5.7	452	0	+5.6
U. S.—20 Cities avg.	**704**	0	+4.6	**500**	0	+4.4
Montreal	563	0	+2.4	440	0	+3.1
Toronto	602	+1.7	+10.5	465	0	+7.7

Rugged Autocar Tandem Axle Tractor pulls 8-wheel dump trailer and tandem semi-trailer with 40-ton payloads.

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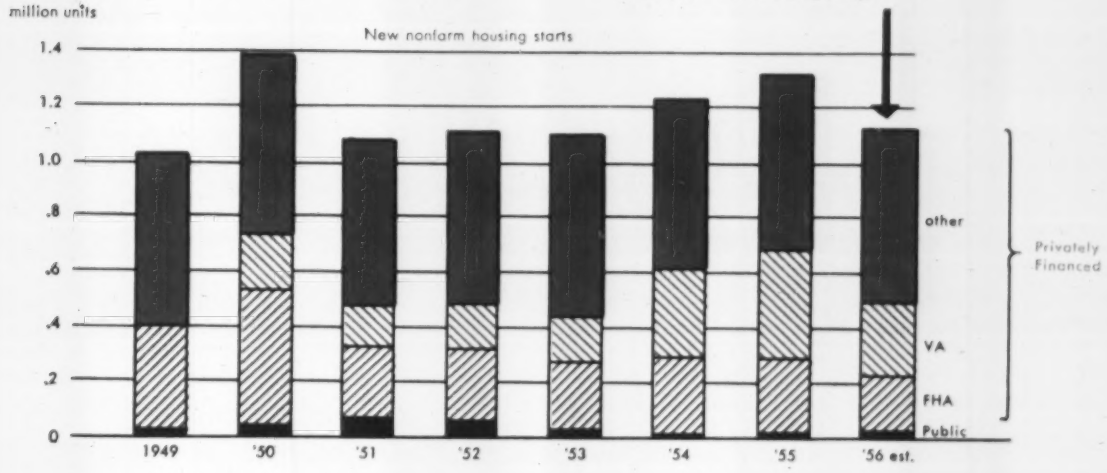
Homebuilding . . .

. . . dips in a year of tight mortgage money but still keeps million-a-year record going



THE LONGER LOOK:
Homebuilders Face a Changing Market

Homebuilding has been the most disappointing economic activity of 1956. New housing starts are running about 15% below the 1955 total of 1,329,000, and dollar spending on new residential construction will run about 9% under last year's record of 16.6 billion. Early forecasts of homebuilding in 1957, furthermore, look for no improvement.

But this does not mean that the market for new homes is falling apart. This year is the eighth in a row with more than a million starts, a height never reached before 1949. And only in 1955 did more money go into residential construction.

What it does mean is that the homebuilding industry—which a short time back had a cheery vision of booming along at 1,300,000 units a year—must now settle for a low figure. And even to stay above the 1,000,000 level, it will have to contend with some fundamental changes in its market.

Builders are tempted to place the blame entirely on restrictive credit policies. Large builders in particular, who rely on government-backed mortgages to make mass housing developments possible, complain they can't get commitments from credit institutions to take on new mortgages in any great number. So some are predicting that new starts will drop as low as 800,000 next year.

Just how much easier credit would help is not at all clear. The fact is that the decline in housing activity set in before the current credit squeeze.

The peak in the annual rate of private starts was reached in December 1954. And the important advance indicators—applications for FHA mortgage insurance and requests for VA appraisals—began dropping after March 1955. Government agencies tightened mortgage terms only at the end of July 1955, and the general credit shortage can be dated even later.

Several years of high building activity have wiped out much of the backlog of needs for shelter that was so large in the early postwar years. This backlog had grown through the depression years of the 1930s and the war years in the early 1940s.

Now even areas with a large influx of new population, such as California and the Southwest, show signs of being "builtup." Government reports on apartment vacancies, indeed, have put Los Angeles and Dallas at the top of the list in percentage of unoccupied dwellings.

In most areas the number of vacancies is not large—and most of these do not last long—but some mobility has been restored to the housing market. For this reason, the supply of good, modern housing available to new families no longer is limited to the new homes started each year.

There is a greater choice of existing housing left by families who are moving to larger quarters or more suburban areas. And the alternative of modernizing or enlarging present houses has become more attractive with the availability of more generous credit terms.

A large unfilled demand remains for low-priced housing for low and lower middle-income families still living in substandard houses and apartments. But rising costs of land, labor and materials make it increasingly difficult to satisfy this demand without government aid through public housing or cheap credit.

This leaves as the prime market for homebuilders the growing families in the middle and upper-income brackets who want bigger and better houses. But families in this market, many of them already occupying postwar housing, are not easy to sell.

It takes attractive styling, careful pricing and real merchandising skill to convince these families that they should trade in their present homes for new ones. Many are inclined to look for bargains even though they can afford to move up on the housing scale.

Providing these bargains is no easy matter. For one thing, it is becoming increasingly difficult to find land at

reasonable prices and within reasonable commuting distance of large cities. Most of the readily accessible sites have been exhausted, and lot prices have been driven up on what remains.

Builders clearly have been aiming at a higher-income market. But they may have overshot the mark. Prices of new homes may be climbing too fast for the market. In 1954 the median proposed selling price of new homes was $12,300; last year, $13,700; this year, $14,600.

The homebuilding industry a few years ago was able to come up with economies in materials and efficient techniques in construction that made low-priced mass housing developments possible—and profitable. But these techniques cannot easily be transferred to today's more particular customers.

A challenge now faces the homebuilding industry that is new to most of its members—how to design and sell houses to people who want new homes but do not urgently need them. Homebuilding is back in a buyers' market.

(*B&F continued on page 80*)

Construction Markets

An On-the-Spot Report From Hartford

"If I stop borrowing money, I'm out of business—and I have no intention of letting more expensive money force me into retirement. Times are good and I'm not letting them pass me."

This comment, made to ENGINEERING NEWS-RECORD by an established developer of office buildings, shopping centers and industrial structures, sums up the current construction market situation in the Greater Hartford, Conn., area. Money is available—but the price is higher now than it was in the past.

ENR's check of the Hartford situation showed that optimism was high, with few exceptions, but the refrain of "expensive money" was constant.

One group still is singing the blues. An executive vice-president of the area's homebuilders association dourly predicted, "Homebuilding here in the coming four to five months will reach its lowest ebb since 1948. Money will cause it—nothing else."

But, even in this case, Hartford's basic optimism broke through the dark clouds. The homebuilder commented on the frozen interest rates on Veterans Administration and Federal Housing Administration mortgages and ventured, "in the spring, however, homebuilding will stage a snappy comeback. By then, Congress probably will have acted to raise VA mortgage interest rates, which, in turn will see action from FHA on its allowable rate. Then watch housing move!"

Although housing may drag, other types of construction will continue at a fast pace because developers are prepared to live with a 5.25% or 5.5% interest rate—rather than face economic stagnation.

Spot checks showed a total of at least $42.6 million worth of construction, public and private, that will be awarded in April or before.

Private work will include small office buildings, garden apartments, warehouses, tool shops, branch banks, neighborhood shopping plazas, some motels and churches.

Of the $14.5 million in private work coming up between now and April, only three jobs will cost more than $1 million: a $1.5-million office building in Hartford and two shopping centers in surrounding towns. One shopping center will cost $1.6 million, the other carries a $1.3-million price tag.

The area will continue in its ancient pattern of supplying hundreds of private construction jobs under $1 million, leaving the multi-million-dollar projects to appear suddenly, be fought over bitterly, and more than likely disappear.

But, the tendency to oppose bigness is counterbalanced by respect for the small businessman who appeals to the still-prevalent New England ideal of "rugged individualism." Such individuals get a warm welcome from the community and they provide a constant source of work for almost all segments of the construction industry.

The public works outlook also is promising. The types of public works projects coming along are varied. Flood-control expenditures, for example, will add up to $2.9 million in the near future. A $3.5-million state trade school is coming along. The Metropolitan District Commission will push ahead with a $6.5-million sewage works program and a $2.5-million waterworks expansion.

Other public works, state and federal, include a $2.3-million Air Guard expansion at Windsor Locks and $5 million for three new buildings at the University of Connecticut.

In this kind of a market, materials generally don't seem to be a serious problem.

Labor and land are the biggest worries at this time in Hartford. Labor is scarce, particularly in the masonry, plastering and electrical fields.

Apprentice programs, though fostered by building trades and contractors, are sapped as youthful neophytes often are lured into industry where the pay is good, fringe benefits are generous and work is steady.

Large-scale industrial tracts are few and far between, a major reason for the lack of new, sprawling plants. Smaller industrial parcels are available, but expensive.

Tracts for mass housing, in contrast, are available and prices are coming down. Owners now look for buyers, a reversal of the situation that prevailed in recent years. Big developers have built up land inventories equal to at least 18 months' housing production.

RARE IN THE HARTFORD AREA are multi-million projects like this $10-million office building for Connecticut General Life Insurance Co. But a steady flow of small jobs makes this a busy construction market.

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Land Experts Gather

Mortgage loan scarcity, impact of road program weighed at realty meeting

The National Association of Real Estate Boards last week called on Congress to provide flexible interest rates on mortgages insured by the Federal Housing Administration and the Veterans Administration.

The throttling effect of a tight money market on homebuilding was emphasized by a number of speakers, including Clarence M. Turley, of St. Louis, outgoing NAREB president.

Turley said a formula must be found under which interest rates on FHA and VA housing loans could go up or down, following the general money market

"During 1956," Turley said, "the rigid and fixed interest rate on GI loans and the disposition on the part of the Housing Administrator to hold FHA rates in line with GI rates, have created a situation in which lenders are not particularly interested in making these loans, except at a discount varying from three to 10 or 11 points."

Housing Chief Albert M. Cole told the realtors at their annual convention in St. Louis that he would "go to bat" for homebuilders and that recommendations would be made to Congress to ease the tight market for mortgage money.

Cole declined to say precisely what proposals his agency will make, but he commented, "every facet of the problem is under study."

Another convention speaker, John A. Volpe, administrator of the new federal highway program, predicted the vast new interstate highway program would have a "revolutionary" impact on every phase of the American economy.

"Modern expressways not only will relieve traffic congestion," Volpe said, "but will bring about the transformation of outlying areas from raw land to busy industrial sites, commercial centers and residential sections."

The Society of Industrial Realtors, meeting concurrently with NAREB, heard architect John S. Bolles, of San Francisco, outline the responsibilities of industry when it moves into a community with a new plant.

"Industry," Bolles said, "must help local governmental agencies solve the traffic, housing and other problems that arise as a consequence of the growth."

Bolles urged that industries coming into a municipality purchase a sizeable tract of land, sufficient not only for the building itself but for other purposes.

"It is not enough," Bolles said, "simply to erect the new plant and put $1,000 worth of shrubbery in front."

And, the advantages of using engineering-contracting firms, which offer a package, (including site acquisition, design and construction) were cited by John P. Soult, president of Fruin-Colnon Contracting Co., of St. Louis.

State Office Needs

Chicago firm retained to make new study in Ohio

Ohio's state office needs will undergo a study by Griffen-Hagen & Associates of Chicago. The study is expected to lead to construction of at least one new office building in the near future, and others later.

John M. Wilcoxon, state finance director, said the new study would probably be complete by next April.

An earlier study authorized by Wilcoxon indicated that a complete group of office buildings will be required in Columbus to meet the needs arising during the next 10 years.

The planing board is charged with responsibility for establishing a continuous five-year program of capital improvements for the state.

Also looking ahead to the future were the trustees of Ohio State University. They authorized a $60-million dormitory construction program to accommodate an estimated 46,500 students by 1960.

Included in the long-range planning is a 4,400-man dormitory, cost $22 million; a 600-unit dormitory for married students, $6.6 million; and a 3,000-bed dormitory, $15 million.

Florida Construction Gets $100-Million Bond Boost

Financing has been authorized for $100 million worth of bond-financed construction in the Jacksonville Fla., area.

The Jacksonville Expressway Authority has been empowered by the State Board of Administration to designate a private bank or agency as trustee for a proposed $70-million bond issue, part of which will be used to refund an original $28-million issue. The remainder will be used for completion of the expressway project, now under construction.

In an entirely separate action, the Jacksonville City Council passed an ordinance permitting the issuance of $39 million in revenue certificates to

finance a series of construction programs.

The projects provided for include: A $15-million sewer extension; $6 million for drainage and paving, and $9 million for a new city hall, sports arena and an auditorium.

Buyers' Market

Bond prices down again, levels reach 17-year low

The long-suffering municipal bond market, which supplies the financing for the bulk of state and municipal public works construction, grew even more feeble last week.

Bond prices skidded to the lowest levels since September 1939, when Hitler's Wehrmacht goose-stepped across the face of Europe.

This time, tight money was responsible for the debilitation of the bond market.

One effect was a decision by the Public Housing Authority to postpone sale of $100 million in local housing authority bonds. The sale originally was slated to come in December; now it probably will come late in January.

And the State of Connecticut, which had rescheduled sale of revenue bonds for part of the Greenwich-Killingly Expressway from the original Oct. 30 date, also pared the package. The latest sale, $54 million, plus present cash balances probably will enable the state to meet construction requirements on the expressway until late spring.

Bond market observers also saw another sign of the market's weakness.

A $5.5-million school construction bond issue for the Levittown, N. Y., area was sold with a 4.30% coupon.

What caused it? A municipal bond expert from Hemphill, Noyes & Co. put it succinctly: "The trouble with school district bonds is a plain case of oversupply."

This particular bond sale, of course, affected only one school district in Long Island's mushrooming Nassau County. But in the present market, other school districts may go slow on their construction programs rather than pay the same price that Levittown paid.

Corporate securities and public utilities' offerings shared the weakness of the tax-exempt bond market.

One utility, marketing a $50-million high-grade issue, was forced to pay an interest rate of 4⅛%. And a small $3-million offering of first mortgage bonds, medium grade, by Sierra Pacific Power Co. brought a single bid—5⅛%. The bid was rejected. But the offer, and

(Continued on page 83)

GASOLINE AND LPG ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
N56	4	2¼	3½	56	14.4 @ 2200 RPM
N62	4	2⅛	3½	62	15.3 @ 2200 RPM
Y69	4	2½	3½	69	21.4 @ 2400 RPM
Y91	4	2⅞	3½	91	28.5 @ 2400 RPM
Y112	4	3 5/16	3½	112	32.0 @ 2400 RPM
F124	4	3	4½	124	36.5 @ 2400 RPM
F140	4	3 1/16	4½	140	42.0 @ 2400 RPM
F162	4	3 1/16	4½	162	49.0 @ 2400 RPM
F186	6	3	4½	186	60.5 @ 2400 RPM
F209	6	3 1/16	4½	209	68.0 @ 2400 RPM
F226	6	3 1/16	4½	226	73.0 @ 2400 RPM
F244	6	3 1/16	4½	244	79.0 @ 2400 RPM
M271	6	3⅜	4½	271	86.2 @ 2400 RPM
M290	6	3¾	4½	290	92.2 @ 2400 RPM
M330	6	4	4½	330	104.4 @ 2400 RPM
M363	6	4	4 11/16	363	128.9 @ 2800 RPM
B371	6	4⅛	4⅝	371	110.0 @ 2400 RPM
B427	6	4 1/16	4⅞	427	127.0 @ 2400 RPM
G134	4	3¼	4½	134	34.2 @ 2000 RPM
G157	4	3½	4½	157	40.0 @ 2000 RPM
E201	4	3⅝	4½	201	65.4 @ 2400 RPM
H227	4	3⅝	5½	227	54.0 @ 1800 RPM
H243	4	3¾	5½	243	57.9 @ 1800 RPM
H260	4	3⅞	5½	260	62.0 @ 1800 RPM
H277	4	4	5½	277	66.4 @ 1800 RPM
K363	6	4	4 11/16	363	123.0 @ 2400 RPM
J382	4	4½	6	382	74.0 @ 1400 RPM
T371	6	4⅛	4⅝	371	119.0 @ 2400 RPM
T427	6	4 1/16	4⅞	427	140.0 @ 2400 RPM
U501	6	4½	5¼	501	159.0 @ 2400 RPM
R513	6	4½	5⅝	513	164.3 @ 2400 RPM
R572	6	4½	5⅝	572	182.4 @ 2400 RPM
R602	6	4½	5⅝	602	191.7 @ 2400 RPM
V603	8	4½	4¼	603	220.0 @ 2800 RPM
S749	6	5⅛	5½	749	217.0 @ 2200 RPM
S820	6	5⅛	5½	820	237.0 @ 2200 RPM

CUSHIONED POWER DIESEL ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
ZD129	4	3¼	3⅞	129	34.0 @ 2000 RPM
GD157	4	3½	4½	157	39.0 @ 2000 RPM
*ED201	4	3⅝	4⅞	201	45.8 @ 2000 RPM
HD243	4	3¾	5½	243	55.0 @ 2000 RPM
*HD260	4	3⅞	5½	260	59.0 @ 2000 RPM
*HD277	4	4	5½	277	63.2 @ 2200 RPM
*JD382	4	4½	6	382	72.5 @ 1600 RPM
TD427	6	4 1/16	4⅞	427	106.0 @ 2000 RPM
RD572	6	4¾	5½	572	154.0 @ 2000 RPM
VD603	8	4¼	4¼	603	175.0 @ 2600 RPM
SD802	6	5 5/16	5½	802	202.0 @ 1800 RPM

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Borrow Pit "C", Winona, Minn. — Pumping Contractor: American Dewatering Corp., Chicago—New York

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"Cut in half, *at least*, the time required to remove the same amount of material using other methods."

Material removed is being used as fill in the construction of Highway 61 between Winona and Homer, Minnesota.

When pumping stops and ground water returns to the site, this pit will become one of Minnesota's famous lakes.

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Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro

other developments in the market, led many bond experts to predict that interest rates will be as high or higher (4¼% and up) for any other public utility bonds that come to market in December.

One other special segment of the market, turnpike bonds, also dramatized the current weakness. The prices on turnpike bonds fell generally. Last week, for example, Massachusetts Turnpike Authority revenue bonds, carrying a 3.30% coupon, were quoted at 80½ to 81¼, which is from 18 to 20 points below par.

In such a market, some authorities might quietly file plans for any new tollroads.

Business Briefs . . .

• **Five-year shortage**—Heavy steel plate will remain in short supply through 1957—and probably for the next five years, according to Charles L. Huston, Jr., president of Lukens Steel. Making a pitch for higher steel prices to finance the industry's expansion, Huston said that if the industry launched a new wave of plate expansion immediately, it would be 18 months to two years before any plates would be produced.

• **Aluminum output**—Production of primary aluminum for the first 10 months of the year totaled more than 1,385,000 tons, according to the Aluminum Association.

• **Army recruiters**—The personnel-short Alaska District of the Corps of Engineers has sent a two-man recruiting team to Army Engineers' district offices in the United States. Object of the hunt: Men to fill 80 engineering and inspecting jobs in Alaska. Salary range for the engineers extends from $6,800 to $9,331.

• **Approve borrowing**—Louisiana voters approved a constitutional amendment that enlarges the territory included in the Greater Baton Rouge Port Commission and also increased the commission's bond capacity to $50 million.

• **Higher salaries**—Presidents of 29 of the largest building materials companies didn't fare quite as well in getting pay raises as their counterparts in general industry—but they did top their 1954 performance, according to McKinsey & Co., management consultants. Executives of the building materials firms boosted their salaries 5.9% in 1955; the average for industry as a whole was 6.3%. Sample salary scale: For a firm with $30 million annual sales, the president received $62,000.

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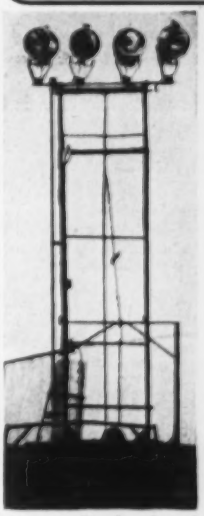

Skid-mounted, 18-ft. steel pipe frame tower weighs 600 lb.

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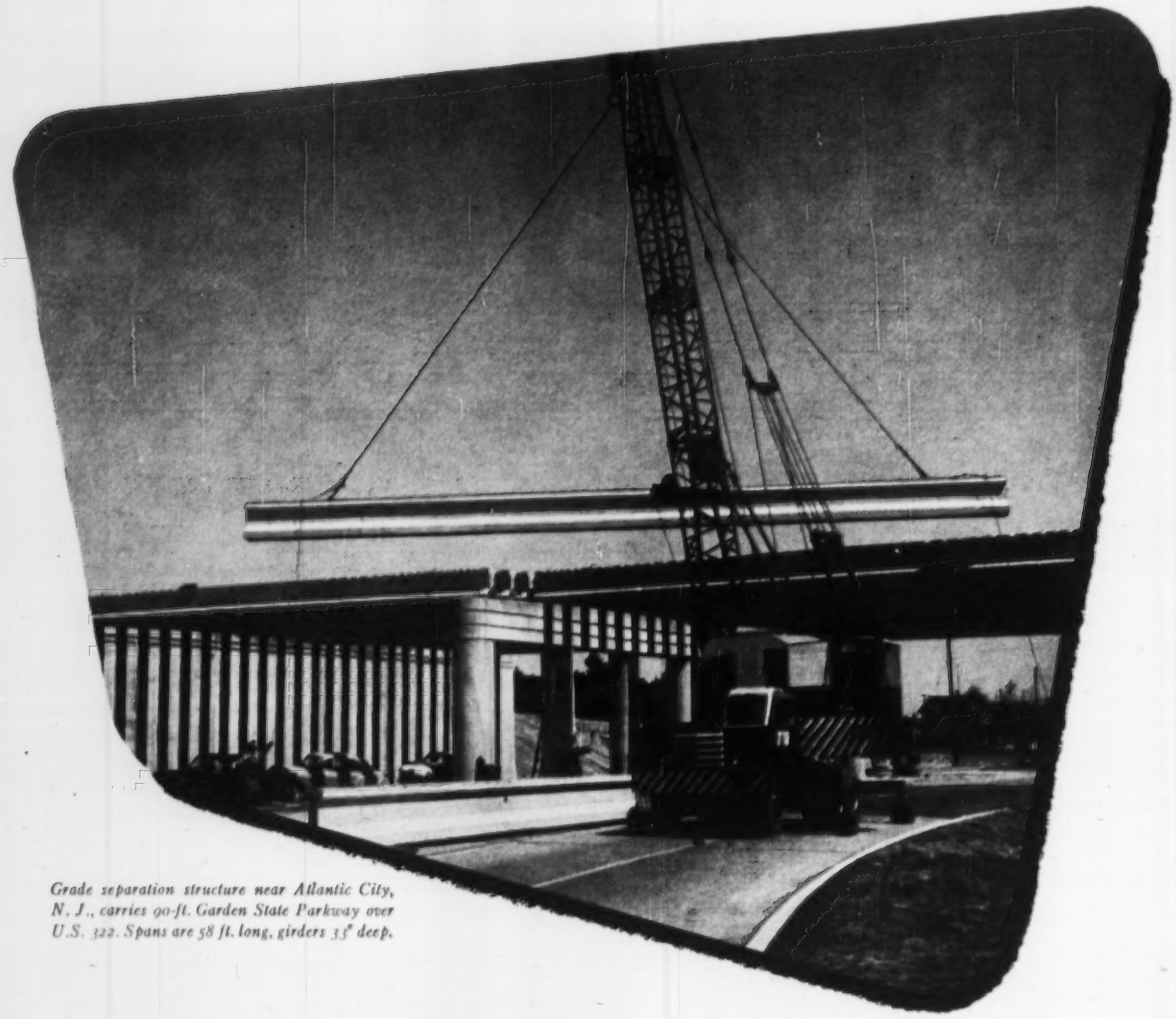

Grade separation structure near Atlantic City, N. J., carries 90-ft. Garden State Parkway over U.S. 322. Spans are 58 ft. long, girders 33" deep.

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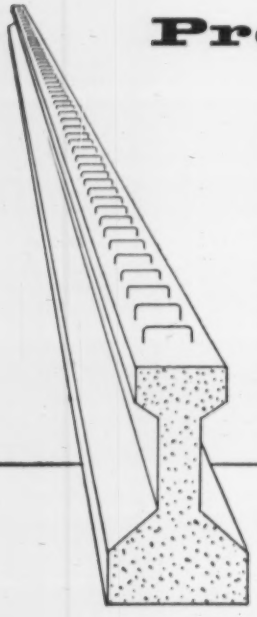

Thousands of bridges, grade separations and trestles must be built on the National System of Interstate and Defense Highways. Engineers should know how to get extra bridges from their highway budgets.

One way to make substantial savings is to use a basic design for most bridges. Production line techniques then can be employed to lower unit costs of fabricating precast, prestressed concrete members. Using a standard design will also save designers' valuable time, freeing them for work on other projects.

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Plans for Legislative Action

Big campaigns are shaping up as construction labor and management join forces to change the Taft-Hartley Act

As President Eisenhower last week began preparation of his State of the Union Message, the Taft-Hartley Act, which has long troubled contractors and the building trades alike, was shaping up as the key labor issue in the next session of Congress. The forces now lining up promise to produce a legislative campaign more vigorous than any waged before and perhaps the first one to see an effective coalition of labor and management.

Here's an indication of what lies ahead:

• Under the leadership of Secretary of Labor Mitchell, the Administration, which previously has suggested Taft-Hartley changes to accommodate the peculiarities of the construction industry, has set up a joint labor-management committee scheduled to hold its first meeting this week. Object of the committee is to consider and recommend, on behalf of the construction industry, amendments to the law. Labor members of the committee are Richard Gray, president of the AFL-CIO Building and Construction Trades Department; Maurice Hutcheson, head of the carpenters union; and Peter Schoemann, president of the plumbers union. Last week's guess was that employer members, then unnamed, would come from the Associated General Contractors, National Constructors Association and specialty contractor groups.

• The Nassau and Suffolk County Contractors Association on New York's Long Island is spearheading an effort to get members of the construction industry, both labor and management, across the nation to educate themselves on Taft-Hartley problems and to endorse and support suitable amendments, with recommendations initially directed to the new Mitchell committee. Out of the first joint meeting sponsored by the association came general agreement that the law is not realistic, is inequitable to the building trades, and needs to be changed. Legalization of pre-hire contractors was reported to be one of the employers' goals.

• The National Chamber of Commerce will launch an "aircade" in February to take national legislative issues "to the doorstep of businessmen themselves all over the nation." Headed by Chamber President John Coleman, the dramatic legislative action program will seek to educate employers on the content and implication of pending legislation and to get employers to keep their Congressional representatives posted on their views. It looks as if Taft-Hartley, with emphasis on secondary boycotts and right-to-work legislation, will be on the list, along with minimum wage-fixing, housing, education, taxation and social security.

• The AFL-CIO Building and Construction Trades Department, with a record of effective legislative action behind it, will schedule for next March a Legislative Conference—its third in three years—to discuss its legislative goals. As in the past (ENR Mar. 15, p. 129), emphasis is expected to be on the Taft-Hartley Act (which building trades President Gray says has reduced union membership among construction workers from 86 to 60%), right-to-work laws, prevailing wages, housing and school construction.

• AFL-CIO President George Meany repeatedly is warning organized labor that one of its biggest threats "is in the legislative field." At the iron workers 30th convention, held last month in Washington, D. C., he explained how the Taft-Hartley Act can give the building trades "quite a going over" and said labor would "see to it" that the law is changed and right-to-work legislation removed from the books.

The big question is whether contractors and the building trades will push for a new law applicable only to the construction industry or will agree to settle on amendments. President Gray has suggested a new law that would be to the construction industry what the Railway Labor Act is to the railroad industry. Indications are that the Long Island contractor group is inclined to agree with this approach—one spokesman said legislation of pre-hire contract might lead to such a law. However achieved, minimum changes sought by the building trades include elimination of the mandatory injunction provision and legalization of common site picketing as well as of pre-hire contracts. The building trades also will seek repeal of Sec. 14 (b), which allows states to pass right-to-work laws. But this is a less crucial issue because that war can be waged at the state level if Congress refuses to lend its support.

(*Labor continued on page 86*)

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Joint Negotiations

Court case tests right of association members to bargain separately

A Los Angeles employers' association has challenged the right not only of member firms but of nonmember as well to weaken the collective bargaining strength of an employers' association by breaking away from joint negotiations and signing separate labor contracts when the association is bargaining for a master contract covering all members.

The Plumbing, Heating and Piping Employers Council of Southern California has filed a $5-million damage suit against four member and six nonmember firms. The firms are charged with violating their obligations to the association, conspiring to breach the master agreement, attempting to destroy the purposes of the council and restraint of trade.

Genesis of the suit was the council's effort last year to negotiate a contract covering AFL-CIO plumbers throughout Southern California. The council had asked all of its members to shut down, after scattered walkouts occurred, on the theory that a "strike against one is a strike against all." Several firms refused to comply and signed separate short-form agreements with the union, committing themselves to whatever terms the association might finally agree to with the union.

Basis of the suit against member firms is that they violated the council's by-laws by signing independently with the union. The nonmember firms, it is argued, were guilty of the same offense because, by executing the short-form agreement that incorporated by reference the provisions of the master contract, they surrendered, at least by implication, their collective bargaining rights to the council.

Labor Briefs . . .

• **New rates**—Wages of 15,000 carpenters in western Washington will be increased 14 cents an hour Jan. 1, giving a new rate of $2.94. Ten cents of this raise is for a scheduled deferred increase under an existing three-year contract and four cents is based on cost-of-living increases.

• **Tax deduction**—The U. S. Tax Court has ruled that three construction workers on the du Pont plant in Kinston, N. C., could deduct board and lodging at the project as business expenses for income tax purposes, because they were away from home on temporary employment.

OFFICIAL PROPOSALS

Bids: November 29, 1956

New York State Road Work

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Barge Canal Improvement Law and Highway Law, sealed proposals will be received, until 10:30 A.M., EST on November 29, 1956 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract U. S. 93 for
Lowering Sills, Extending Gates
and Miscellaneous Work at Lock 23
Erie Canal, Onondaga County and
Lock 1, Oswego Canal, Oswego Co., N. Y.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor The Gov Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract U. S. 93 may be examined and obtained at the office of Mr. William Robinson, District Engineer, 301 E. Water Street, Syracuse 1, New York.

The deposit for Plans and Proposal Forms for U. S. 93 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's Estimate of Cost for Contract U. S. 93 is confidential and will be made known at the time of receiving bids.

Proposals for U. S. 93 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of five percentum, (5%) of the bid. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Barge Canal Improvement Law and to the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

JOHN W. JOHNSON
Supt. of Public Works

Bids: November 27, 1956

Contract 439

MARGARETVILLE-ARKVILLE SEWERS

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M. Eastern Standard Time on Tuesday, November 27, 1956 for Contract 439, for the construction of about six miles of sewers, including a railroad crossing, four stream crossings, manholes and other appurtenances, and a total of about six miles of house connections. The sewers will be from six to 15 inches in diameter and the house connections six inches in diameter. The location of the proposed work is in the Village of Margaretville and in the hamlet of Arkville, in the Town of Middletown, Delaware county, New York.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1312 (Acting Secretary's Office), at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same; the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

OFFICIAL PROPOSALS

Bids: December 20, 1956

Port of Corinto, Nicaragua, C.A.

FURNISHING AND DELIVERING MATERIALS HANDLING EQUIPMENT AUTORIDAD PORTUARIA DE CORINTO MANAGUA NICARAGUA

Sealed bids in triplicate for Furnishing and Delivering Materials Handling Equipment, Port of Corinto, will be received by the Autoridad Portuaria de Corinto, hereinafter referred to as the Autoridad Edificio Cerna, Calle Central Este, entre 4 y 5 Ave., 4° Piso, Managua, Nicaragua, C.A. until 10:00 A.M. Nicaragua time on December 20, 1956, at which time the bids will be opened.

The work consists of designing, manufacturing, testing, furnishing and delivering gasoline or diesel powered materials handling equipment, including the following general types:

- 14 Fork Lift Trucks, Cushion Tired—5,000 lb. capacity
- 2 Fork Lift Trucks, Pneumatic Tired—16,000 lb. capacity
- 1 Straddle Truck, Pneumatic Tired—15,000 lb. capacity
- 5 Tractors Warehouse, Cushion Tired—500 lb. drawbar pull
- 3 Tractors Warehouse, Cushion Tired—2,600 lb. drawbar pull
- 1 Crane, mobile-single engine-pneumatic tired with 30 foot boom and minimum capacity of 14,000 lbs. on 10' radius
- 1 Crane, mobile-single engine pneumatic tired with 50 foot boom and minimum capacity of 25,000 lbs. on 15 foot radius
- 80 Trailers, warehouse-pneumatic tired, 72" x 108", 5000 pound capacity.
- 6 Trailers, heavy duty cushion-tired 84" x 204", 50,000 pound capacity.
- 1500 Pallets, hardwood, 4 way non reversible 48" x 72".

Spare parts sufficient for two years operation of the equipment listed above.

Contract Documents including specifications may be obtained from the Autoridad upon payment of Seventy Córdobas per complete set of Contract Documents, which money will not be refunded.

The Contract Documents may be examined at the above offices of the Autoridad, the offices of the Consulate General of Nicaragua in New York City, and at the New York offices of Tippetts-Abbett-McCarthy-Stratton, Engineers.

The Authority reserves the right to reject any or all bids and waive any informality or irregularity in bids received.

Each bid shall be accompanied by a bank guarantee from a bank approved by the Autoridad or bid bond satisfactory to the Autoridad, in the amount of five (5) percent of the total bid price, in Córdobas. The total bid price in Córdobas shall be deemed to be the total dollar equivalent amount of the bid multiplied by 7.0.

AUTORIDAD PORTUARIA DE CORINTO
Managua, Nicaragua

U. S. Government

United States Department of Commerce, Bureau of Public Roads, November 23, 1956. Sealed bids will be received at the Inter-American Highway Office, Bureau of Public Roads, Room 4069, General Services Administration Bldg., Washington 25, D. C. until 2 p.m., e.s.t., January 4, 1957 for the construction of Nicaragua project 8-A on the Inter-American Highway in Nicaragua, consisting of grading, drainage, selected borrow base and other work. The project begins at Sebaco about 60 miles north of Managua and extends north for about 48 miles to Condega. The approximate quantities of the major items of work are: 1,288,000 cubic meters Unclassified Excavation, 590,000 cubic meters Borrow Excavation, 186,000 cubic meters Selected Borrow Base Course, 3100 cubic yards Class A Concrete in Box Culverts, 365,000 lbs. Reinforcing Steel, 15,000 linear feet Nestable, Bituminous Coated Corrugated Metal Culvert Pipe (from 24" to 72"). Bids will be accepted only from United States or Nicaragua firms with a satisfactory record of performance on highway construction in the United States or in Nicaragua. The need for progress payments, where progress payments may legally be made, will not be treated as a handicap in awarding a contract. Plans, specifications, and Proposal Forms are available upon request from the address given above, or at the Inter-American Highway District Office, Bureau of Public Roads, 516 Avenida Roosevelt South, Managua, Nicaragua. C. D. Curtiss, Commissioner.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, N. Y.

Bids: December 6, 1956.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 6th day of December, 1956, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 5, F. G. H. Youngman, District Engineer, 65 Court St., Buffalo, N. Y.						
Erie	FINTC 56-1	New York State Thruway—Niagara Sect. Sub. N-4 (Washington St. to Franklin St.) Project I-865(7)	0.21 (0.11 Ramps)	16 Span Viaduct Structure 7 Span Elevated Ramp	$210,000 Plans $50	$3,750,000
Erie	NTC 56-9 FINTC 56-10 FISTC 56-11	New York State Thruway—Niagara Sect., Subs. N-2, N-3, (Clinton St. to Peabody St.) and 4 cross or service Roads Project I-865(11)	1.36 (0.78 Acc.)	9" Cem. Conc. Pavt. 37' & 49' Var. Wide=1.27 Mi.; Grad., Drain. & Misc. Work=0.09 Mi.; Cem. Conc. Pavt. Acc. Rds.=0.35 Mi.; Asp. Conc. Ty. 2R=0.43 Mi.; 1 RR Sep. Pt. Gird & Comp. I-Beam 932.4'; 2 Hy. Seps. Pt. Gird. & Comp. I-Beams 180.2' & 261.9'; 3 Hy. Seps. Comp. I-Beams 125.3', 141.3' & 127.1'	$405,000 Plans $100	7,359,000
Erie (Rte. 5)	FAC 56-20	City of Lackawanna Arterial Route (Fuhrmann Blvd.-Hamburg Turnpike Viaduct) (North City Line-Ridge Road) Project U-750(4)	0.15	Demolition	$1,500 Plans $10	28,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 W. Main St., Hornell, N. Y.						
Allegany	FASS 56-12	Nile-West Clarksville, Co. Rd. 1 Project S-80(3)	0.11	Bit. D.S.T. Broken Stone Prestressed Conc. Beam Br. 110'	$8,000 Plans $10	145,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Lewis	FASS 56-13	Remington Corners-Indian River-Croghan, Pt. 2, Co. Rd. Project S-337(2)	5.37	Bit. Mac.-Ty. 1 Pen. Meth. Prestressed Conc. Beam Br. 180'	$35,000 Plans $25	633,000
DISTRICT No. 10, M. E. Gould, District Engineer, 325 W. Main Street, Babylon, L. I., N. Y.						
Queens (Rte. 25D)	FIHHE 56-5	Horace Harding Expressway, Sect. H, Cont. 1 (Parsons Blvd. to 192d St. Project I-862(11)	1.45 (3.72 Acc)	9" Cem. Conc. Pavt. 2 @ 36' Var. Wide=1.37 Mi.; Cem. Conc. Pavt. (Acc. Rds.)=0.60 Mi.; Asp. Conc. Opt. (Serv. Rds.)=2.74 Mi.; Misc. Work=0.46 Mi.; 2 Ped. Overpass I-Beams 106.7' and 106.7'. 2 Hy. Seps. Comp. I-Beams 108.2' and 105.9'. 1 Hy. Sep. Comp. Girder 112.2'	$350,000 Plans $100	6,277,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: November 30, 1956.

Construction of a Steel Water Tank

ADVERTISEMENT FOR BIDS
FURNISHING AND ERECTING
ELEVATED STEEL WATER STORAGE
TANK, 500,000 GALLON CAPACITY
ARLINGTON COUNTY, VIRGINIA

Sealed proposals for furnishing all material and equipment and doing all work required for the furnishing and erecting of an elevated steel water storage tank, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A.M. Eastern Standard Time, on NOVEMBER 30, 1956, and there publicly opened and read immediately thereafter:

CONTRACT 5.

FURNISHING AND ERECTING ELEVATED STEEL WATER STORAGE TANK 500,000 GALLON CAPACITY

1. Location: The work is located in Arlington County, Virginia, on County Owner property at N. Wakefield Street and 24th Street N.

2. Type of Work: The principal items of work include the following:

Furnishing and erecting a 500,000 Gallon Elevated Steel Water Storage Tank complete with all accessories, including Obstruction Lighting and Cathodic Protection.

3. Copies of Plans and Specifications, Information for Bidders, Bid Form and other Bidding and Contract Documents may be examined at the Office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street, N. W., Washington, D. C. and at the Office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH STREET, NEW YORK 7, N. Y.

4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia, upon Deposit of TEN ($10.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other Sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) Percent of the Deposit. No refund will be made for return of documents in poor condition or later than the two-week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a Certified Check or Acceptable Bidder's Bond in an amount of not less than Five Per Cent (5%) of the amount of the Bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) Days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: H. G. Bonney
Purchasing Agent

OFFICIAL PROPOSALS

Bids: December 13, 1956

Sewerage and Sewage Disposal Improvements

NORTH SHORE SANITARY DISTRICT
LAKE COUNTY, ILLINOIS

Sealed proposals, invited by the Board of Trustees of the North Shore Sanitary District, will be received by the Secretary-Attorney of the District at the offices of the District at the Waukegan Sewage Treatment Plant, Dahringer Road, Waukegan, Illinois, until 11:00 A.M., Central Standard Time, December 13, 1956, at which time and place they will be publicly opened and read aloud, for Division C of the Sewerage and Sewage Disposal Improvements entitled "Clavey Road Sewage Treatment Plant."

The work comprises the construction of the Clavey Road Sewage Treatment Plant including main building, grit building and sewage meter vault, primary settling tanks, aeration tanks, final settling tanks, sludge control building, sludge digestion tanks, sludge beds, water meter vault, outside piping and conduits, roads and walks, seeding and sodding, all excavation and embankment, and miscellaneous appurtenant work.

The Instructions to Bidders, Proposal, Agreement, Form of Performance Bond, Specifications, and Plans may be examined at the office of the North Shore Sanitary District or the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois. Copies of these Contract Documents may be obtained from either office upon the deposit of $20.00 for each set. The amount of the deposit will be refunded if the documents are returned in good condition within 30 days after the opening of bids.

Each proposal must be accompanied by money or a certified check on a solvent bank or trust company, made payable to the North Shore Sanitary District, or by an acceptable bid bond, in the amount of not less than 5 per cent of the total bid.

The Board of Trustees reserves the right to reject any or all bids or to waive any informalities and to accept the bid which it deems most favorable to the interest of the North Shore Sanitary District, after all bids have been examined and canvassed.

NORTH SHORE SANITARY DISTRICT
LAKE COUNTY, ILLINOIS
By Mark H. Beaubien
Secretary-Attorney

Dated November 10, 1956

Bids: January 22, 1957

Port of Corinto, Nicaragua, C.A.

PORT CONSTRUCTION—PHASE I
PORT CONSTRUCTION—PHASE II
AUTORIDAD PORTUARIA DE CORINTO
MANAGUA, NICARAGUA

Sealed bids in triplicate for Port Construction, Phase I and II, at the Port of Corinto, will be received by the Autoridad Portuaria de Corinto, hereinafter referred to as the Autoridad, Edificio Cerna, Calle Central Este, entre 4 y 5 Ave., 4ª Piso, Managua, Nicaragua, C.A. until 10:00 A.M. Nicaragua time on January 22, 1957, at which time the bids will be opened.

Phase I of the work consists of the construction of a new wharf approximately 370 meters long, including dredging and disposal of dredged materials; furnishing and placing rock and sand fill, riprap and filter blankets; furnishing and placing concrete piles and concrete deck structure; furnishing and installing timber fendering; and furnishing and installing deck fittings and track work. Listed below are the estimated qualities for the principle items of work.

85,000 C.M.	Dredging
46,000 Metric Tons	Rock Fill
139,000 C.M.	Sand Fill
26,000 L.M.	Reinforced Concrete Pile
5,000 C.M.	Concrete

Phase II of the work consists generally of the following construction: 1) Two transit sheds approximately 50 meters wide and 117 meters long; a pump house approximately 3.8 meters wide and 5.0 meters long; and a truck service shelter approximately 9.1 meters wide by 17.4 meters long; all steel frame structures with protected metal roofing and siding. 2) A guard house approximately 3.7 meters square, of concrete unit masonry construction with concrete roof and built up roofing. 3) Masonry and steel partitions; overhead steel and hollow metal doors; commercial projected steel windows; plumbing; sprinkler systems; electrical work, painting and miscellaneous incidental items of work for the building structures. 4) Fire pump and fuel tank; fuel dispensing units and storage tanks and interconnecting piping. 5) Water tower for fire protection system and standby pump. 6) Utilities, including fire and domestic water mains, sanitary waste and storm drainage, and electrical distribution. 7) Reinforced concrete paving of port area and railroad track work.

Separate Contract Documents including plans and specifications have been prepared for Phase I and for Phase II and may be obtained from the Autoridad upon payment of One Hundred and Seventy Five Cordobas for each separate complete set of Contract Documents, which money will not be refunded.

The Contract Documents may be examined at the above offices of the Autoridad, the offices of the Consulate General of Nicaragua in New York City and at the New York offices of Tippetts-Abbett-McCarthy-Stratton Engineers.

Bids may be submitted for Phase I, Phase II, or both combined. A separate proposal form is provided for the combined bid.

The Autoridad reserves the right to reject any or all bids and waive any informality or irregularity in bids received.

Each bid shall be accompanied by a bank guarantee from a bank approved by the Autoridad, or bid bond satisfactory to the Autoridad, in the amount of two (2) percent of the total price in Cordobas.

The total bid price in Cordobas will be deemed to be the total dollar equivalent amount of the bid multiplied by 7.0.

AUTORIDAD PORTUARIA DE CORINTO
Mangua, Nicaragua

Bids: November 30, 1956.

Time Changed From 11:00 A.M. To 2:00 P.M.

Construction of 16-inch and 30-inch Diameter Water Supply Mains Arlington County, Virginia

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing all materials and equipment and doing all work required for the construction of 16-inch and 30-inch diameter water supply main, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 2:00 P.M., Eastern Standard Time, on Nov. 30, 1956, and there publicly opened and read immediately thereafter:

STAGE II

CONTRACT 4

CONSTRUCTION OF 16-INCH AND 30-INCH DIAMETER WATER SUPPLY MAIN AND APPURTENANCES.

1. Location: The work is located in Arlington County, Virginia, on public streets from 30th Street N. to Yorktown Boulevard, along Yorktown Boulevard to N. Vermont Street and N. Vernon Street, along N. Vernon Street to 24th Street N. and on 24th Street N. to Wakefield Street (30 inch Water Supply Main) and on 24th Street N. from Wakefield Street to Old Dominion Drive and 26th Street. (16 inch Water Supply Main).

2. Type of Work: The principal items of work include the following:

Approximately 4400 lin. ft. of 30-inch steel or reinforced concrete water pipe together with manholes, cone valves, miscellaneous, blow-off, air release or inlet valves, connections to existing water mains, etc.

Approximately 1700 lin. feet of 16-inch cast iron water pipe, together with miscellaneous gate valves, manholes, hydrants, connections to existing mains, etc.

Approximately 1000 lin. ft. of 24-inch concrete storm sewers and appurtenances.

3. Copies of Plans and Specifications, Information for Bidders, Bid Forms and other bidding and contract documents may be examined at the office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street, N. W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH ST., NEW YORK (7), N. Y.

4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of THIRTY ($30.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more. All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bids within Thirty (30) days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: H. G. Bonney
Purchasing Agent

Bids: December 10, 1956

Construction of High Pressure Natural Gas Pipe Line

The Scranton Spring Brook Water Service Company invites sealed proposals for the proposed construction of forty-four (44) miles of twelve (12) inch steel pipe line in Susquehanna, Lackawanna, and Luzerne Counties, Pennsylvania, until 2 P.M. E.S.T., Monday 10 December 1956, at which time they will be opened and read. Proposals may be mailed or delivered to the Offices of the Company at 30 North Franklin Street, Wilkes-Barre, Pennsylvania. Contract Documents and Plans with a return self-addressed envelope may be secured from the Company at the same address, upon receipt of a deposit of $50 for each set.

Rulison Evans
Chairman of the Board and President.

Bids: December 18, 1956

The City of White Plains Department of Public Works

NOTICE TO CONTRACTORS

Sealed bids for Construction of a 400-Ton Municipal Refuse Incinerator Plant will be received by the Commissioner of Public Works of the City of White Plains, New York, at his office, No. 255 Main Street, White Plains, New York, until 11:00 A.M. EST, Tuesday, December 18, 1956.

The work to be done under the major contract includes the furnaces, building, and appurtenant work.

Separate contracts will be let for the Electrical; Plumbing; and Heating and Ventilating Work.

Contract documents may be examined and obtained at the above office and office of Metcalf & Eddy, 1300 Statler Building, Boston, Mass., $100 deposit.

Eric A. Andrews
Commissioner of Public Works

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $28.25 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36. December 6th issue closes November 26th

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Teaching appointments for September, 1957, available at university-associated College of Engineering in field of Civil Engineering. Salary and rank commensurate with experience and academic qualifications. Primary teaching field open as present faculty is flexible; preference, if any, would be in sanitary engineering and allied fields. Suburban location, Middle West, adjacent to large industrial center. P-3268, Engineering News-Record.

City Engineer: Unusual opportunity for graduate Civil Engineer or equivalent with professional license in southern Pennsylvania city. Experience essential in land surveying, street and sewer design and construction and related municipal work. Experience desirable in zoning and subdivision control. No structural design is involved. Would be in charge of Engineering Department, supervise survey crew and draftsmen, and would be expected to meet the public as required. Salary range $7,000 to $8,500 with usual benefits. Permanent non-political position for right man. Send resume of training and experience to: Borough of Chambersburg, 100 South Second Street, Chambersburg, Pa. Attention: J. G. Cree.

Estimator—Buffalo, New York Area experienced on large building propects. Please furnish experience record and salary requirements. Johnson, Drake & Piper, Inc., 2760 Walden Avenue, P. O. Box 2567, Buffalo 25, New York.

Chairman of civil engineering department in college in New York State. Ph.D. desirable, not essential. Position open summer of 1957. P-3324, Engineering News-Record.

Professor or associate professor in civil engineering and mechanics. College in New York State. Term starting February or September 1957. Ph.D. desirable, not required. P-3328, Engineering News-Record.

Engineers and draftsmen structural for steel and concrete design Public Buildings. Consulting Engineers office. Call or write giving training and experience. Saul Shaw & Co., 24 Commerce St., Newark, N. J.

Wanted: Draftsmen, also Bridge Designers and Highway Designers, preferably with some field experience for major highway and bridge projects. Forward education and experience records along with salary requirements. Brookhart & Tyo, Consulting Engineers, 1729 N. Front Street, Harrisburg, Penna.

Draftsmen—Opportunity for growth with a new division of an old, established company. Openings for draftsmen with architectural, structural or mechanical experience. Send complete personal and employment history with compensation requirements. (Chicago location). P-3452, Engineering News-Record.

Structural Engineers—Two to ten years experience on buildings or bridges. Attractive offer with progressive consulting firm. Box 121, Station H, Toledo, Ohio.

An employment advertisement in this EMPLOYMENT OPPORTUNITIES section will help you find the engineers you need. It's an inexpensive, time saving method of selecting competent personnel for every engineering job.

POSITIONS VACANT

Civil or Sanitary Engineers salary open—depending upon qualifications. Send resume to Gardner & Sterling, Consulting Engineers, P. O. Box 74, Salisbury, Maryland.

Experienced Estimator and Chief Engineer between the ages of 34 and 48 for preparing estimates, pricing, purchasing, expediting, and job management. Permanent position for the right man with Midwest General Contracting firm specializing in industrial, commercial and public works. As this job will be in the capacity of assistant to the president, none but top men need apply. Send complete history, including education, past experience, references, salary expected, and photograph, if available. P-3451, Engineering News-Record.

Designers—Steel, Concrete, Electrical Piping, Air-Cond., Power Plants & Industrial Bldgs. Marbarry Corp., 120 Greenwich St., N.Y.C. Rector 2-3749.

Wanted, Civil Engineering Draftsmen, Ink Tracers, Computers, Land Surveyors. Only well qualified need apply. Give experience record and salary expected in first letter. P-3379, Engineering News-Record.

Carpenter foreman or carpenter superintendent who is qualified to take over 3 highway bridges and complete same. Must be thoroughly familiar with plans and specifications. P-3386, Engineering News-Record.

Wanted: Civil Engineer, registered in New Jersey, at least 10 years experience in road and bridge design and construction. Must have executive ability. State qualifications in full, experience resume, references and salary requirements. Reply to P-3307, Engineering News-Record.

Engineers for municipal and industrial water supply, sewerage and treatment projects. Opportunities for permanent connection with long established firm of consulting engineers in mid-west. Both E.I.T.'s and engineers considered. Full information and references in first letter requested. P-3116, Engineering News-Record.

Teaching appointments in civil engineering department. On Feb. 1, 1957 or earlier. Two more Sept 1, 1957. Salary and rank depend upon qualifications. M.S. degree not required. Apply chmn. Dept. of Civil Engineering, Univ. of Nebr., Lincoln, Nebraska.

Designer-Draftsman. Several positions open in structural, mechanical, or civil engineering in established engineering firm in Florida. Black and Associates, Inc., 700 S. E. 3rd Street, Gainesville, Florida.

Position open for an executive experienced in general contracting to take complete charge of our established, growing branch in South Florida. Must be experienced in the financial end as well as having a general contracting and engineering background. Opportunity for investment if desired. P-3511, Engineering News-Record.

Water System Superintendent Wanted by City of Rock Island, Illinois. This is a management job in handling water utility for a city with 50,000 people. Water superintendent has charge of production, distribution, treatment and storage of water. 33 employees in the department, superintendent reports to the City Manager. Qualifications: 5 years experience as water superintendent, or division head in a city water utility. College graduate, degree in civil or sanitary engineering preferred. Age: Under 50 beginning salary—up to $8,040 per annum, depending on qualifications. Good opportunity for advancement. Apply Director of Personnel City Hall Rock Island, Illinois.

POSITIONS VACANT

Estimator—Senior grade. Minimum seven years experience in supervision and preparation of all types of plant and equipment estimates for petroleum, chemical or allied industries. Capable of figuring to complete costs on all size projects. Reply, Personnel Mgr., Catalytic Construction of Canada, Limited, 600 S. Vidal Street, Sarnia, Ontario, Canada.

Estimator—Able to prepare complete bids for public, commercial and industrial buildings. Top man only. Location Ohio. Submit experience, references and salary desired. P-3477, Engineering News-Record.

Experienced owner's representative for construction of industrial plant in Venezuela. Graduate Engineer—knowledge of Spanish—good record. Large, expanding company with opportunity for excellent permanent connection. Send resume to P-3495, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Wanted: Master Mechanic to take complete charge of maintenance shop and stock room. N. E. area. Large concern. State age, training and experience. Good opportunity for right man. P-3522, Engineering News-Record.

Building Estimator wanted experienced in quantity work for concrete masonry and carpentry for large New York General Contractor. Send resume to P-3458, Engineering News-Record stating experience, salary desired and if working at present.

Engineer to work in office as assistant to Chief Estimator on quantities. Opportunity for trainee. Reply to P-3461, Engineering News-Record stating experience, references, salary desired and if working at present. New York Building contractor.

Civil Engineer—Recent Graduate—Municipal Engineering, Road, sewer & drainage design, field inspection and office work. Starting salary $4,500, minimum. January graduates considered. Send resume to W. M. Crank, Town Hall, Main St., Stratford, Conn.

EMPLOYMENT AGENCY

Wanted Engineers, Designers, Draftsmen All lines. Chemists, teachers and industrial engineers. Recent grads, Cleveland Engineering Agency 2132 E. 9, Cleveland.

EMPLOYMENT SERVICE

Salaried Positions $6,000 to $35,000. We offer the original personal employment service (established 16 years). Procedure of high standards individualized to your personal requirements. Identity covered. Particulars—R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo 3, N. Y.

POSITIONS WANTED

Civil Engineer, 50, Administrative, executive, expressways, bridges, steel and concrete structures, sewage, design and construction. Available Nov. 22 PW-3293, Engineering News-Record.

Construction Executive, Chief Estimator fully experienced, quantity survey to completion, subs, purchases, job manage heavy industrial, commercial, monumental, prefer N. Y., N.E., Mid-Atlantic States. PW-3313, Engineering News-Record.

Salesman, estimator, production man experienced in large scale industrial roofing and sheet metal contracting, wants worth-while connection with growing firm. Can produce profitable sales in volume. Write PW-3439, Engineering News-Record.

(Continued on following page)

HIGHWAY ENGINEERS

Immediate Employment

Starting positions in California's highway expansion program. $436/mo. to start, with first raise after 6 months. Subsequent promotional opportunities to higher level positions. Open to recent college graduates in civil engineering. Write for illustrated booklet: C. S. WARNER, Supervisor, Section E, State Personnel Board, 801 Capitol Avenue, Sacramento 14, California.

STRUCTURAL & CIVIL ENGINEERS

to work in our Boston Office

METCALF & EDDY

1300 Statler Bldg., Boston

Address inquiries to Mr. Ingalls

CIVIL ENGINEER

British Guiana

Very good opportunity for young, married engineer interested in South America. Transportation furnished; company housing available. Require 5 years construction experience. In letter give age, education, types of construction projects handled, and salary required.

P-3265, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Draftsmen, Designers and Engineers

Opportunity available for wide varied experience and advancement in Consulting Sanitary Engineers' office on several large interesting projects. Salary commensurate with experience and ability to assume responsibility. Usual fringe benefits offered relative to hospitalization, group insurance, etc. Location southwestern Ohio. Apply giving name, age, education, experience, and salary—or for an interview.

P-3371, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS

Important permanent positions available for MECHANICAL or ELECTRICAL ENGINEERS with manufacturer of equipment for the petroleum industry located in the southwestern United States. Required experience in the design and development of automatic control equipment. Positions available in Sales and Engineering departments. Salary open. Send resume to

P-3454, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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Also excellent opportunities and salaries for experienced men in designing of refineries, chemical & power plants, industrial & commercial buildings, highways. No fee.

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Superintendent, Building Construction

Top flight man by growing company operating nationally. Give all pertinent data in reply, including education, experience, salary, references and when available.

BLOUNT BROTHERS CONSTRUCTION CO.
P. O. Box 949 Montgomery, Ala.

Quantity Surveyor and Draftsman

Permanent position with well established company of mason contractors. Give age, education, experience and initial salary expected in first letter.

P-3311, Engineering News-Record
520 N. Michigan Ave., Chicago 6, Ill.

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for well established line of imported Surveying Instruments. Instruments meet American Specifications and Standards—already many users including Federal, State and County Agencies. Territories east of Rockies open excepting New England territory. All instruments sold under one year guarantee for quality and accuracy. Write full details experience, references.

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When Answering
BOX NUMBERS...

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

POSITIONS WANTED

(Continued from preceding page)

Management position wanted in industrial roofing and sheet metal contracting, by highly experienced executive, capable and well-known in the industry. Write PW-3433, Engineering News-Record.

Materials Testing Engineer — 8 years exp., college degree, desires position preferably in New Jersey. Presently supervising Spanish technicians on air base program. Available Feb. 1957. PW-3443, Engineering News-Record.

Superintendent, Heavy & Bridge Construction, 19 years experience, bid to completion, $200. PW-3420, Engineering News-Record.

Registered Professional Engineers with available engineering manpower desire to invest in establishing an office to represent any consulting engineering or architectural firm, or to handle their excess of work in an excellent midwestern location. PW-3356, Engineering News-Record.

Graduate registered professional civil engineer, experienced commercial and industrial building estimator, age 40, married, desires connection with general contractor. Middle West preferred. Available immediately. State location of work, salary range possible, other conditions, in first letter. PW-3541, Engineering News-Record.

Pract. Engineer, German, 40; studies mining England-Germany; 18 years Southamerica, bi-lingual; experience surveys, hydrographic, irrigation, floodcontrol studies, dredging, office work, Government reports; proven administrative ability; good organizer, liaison man for new companies; currently employed jr.-exec. capacity Venezuela; available soon; seeks position of responsibility; preferably Southamerica, with perspectives for career and higher-echelon training. PW-3519, Engineering News-Record.

Bldg. Const. Eng. B.S. experienced 23, single, leaving Air Force. PW-3478, Engineering News-Record.

Civil (Const) Engineer, Registered, age 30, 7 yrs. experience in design, survey, field management, planning and administration on diversified projects. Desires midwest. PW-3490, Engineering News-Record.

Res. Engr.-Proj. Engr.-Proj. Mangr. BSCE, 32, Diversified supervisory design & const. exp. in sewer & water systems and treatment plants, utilities, subdivisions; large scale maintenance. West U. S. preferred. Resume & ref. on request. PW-3473, Engineering News-Record.

Surveying Party of 4-men licensed fully equipped well experienced in all kinds of surveying work will work per day basis must be assured 3 months of work. Will travel. Write to 1124 New York Ave. Huntington, N. Y.

Construction Supt. of Assit. Available. PW-3464, Engineering News-Record.

Architectural Specification Writer, nine years experience private and civil service work. PW-3513, Engineering News-Record.

Construction Superintendent; Industrial, commercial, institutional bldgs; large scale housing, churches etc; 25 years exp. field supervision. Similar position desired offering long range opportunity. Resident of New Jersey. PW-3521, Engineering News-Record.

Experience—35 years construction and main-tenance of Bituminous pavements—storm and sanitary sewers—pumping station operation. Design and construction parking areas. Design and construction special equipment and attachments. Mechanical supervision. Equipment operation and repairs. Eligible for retirement. 60 years old. Excellent health. Not a day lost in 30 years. In present position 15 years and on call 7 days a week and 24 hours a day. Would like connection in line with forgoing experience or material or equipment sales. PW-3475, Engineering News-Record.

Project Manager, Project Engineer, 33, 10 years experience, registered professional engineer familiar all stages design and construction of paper mill and heavy construction. Seek position with contractor or mill. PW-3543, Engineering News-Record.

Publicity. Public Relations. Advertising— Former ENR editor, now associated with leading 4A ad agency, would like to obtain challenging position in publicity or advertising department of engineering firm or construction-equipment manufacturer. Sal. $10-12,000. PW-3479, Engineering News-Record.

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Men experienced in design of earth-fill or concrete dams, spillways, penstocks and hydro electric power stations are desirable. Allied experience acceptable.

Send resume to
Manager of Employment & Placement
Industrial Relations Division

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Corporation
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For an immediate personal interview you may phone:
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Joe Braddick, Fairfax 3-2401, Houston, Texas
Bill Milligan, Tucker 1549, Los Angeles, Calif.
Don Palmer, Douglas 2-4032, San Francisco, Calif.

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Architectural Engineer between ages of 25 and 35 with interest in design of industrial buildings and structures.

Excellent opportunity with consulting engineering firm in Middle West. Liberal benefit plans and good working conditions.

Send resume of education and experience with statement of salary requirements to:

P-3222, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

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DESIGNERS
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Engineer with experience in maintenance and equipment engineering desired for the Paper Converting Division of the Rhinelander Paper Company. Experience in the paper industry desirable but not entirely necessary. Age 25 to 35. Salary open. Address Director of Industrial Relations, Rhinelander Paper Company, Rhinelander, Wisconsin.

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Graduate Engineer with at least one year of traffic engineering experience or education. Experience in highway engineering desirable but not necessary.
SALARY: $6500 to $8000
Apply: Malcolm E. Austin
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For Industrial Construction Division

Degree desirable; 10-15 years' administrative, executive & technical experience; knowledge of field construction for the supervision of activities of the industrial construction division. Extensive travel, liberal per diem.

DIVISION MANAGER

For Power Plant Projects Design

10-15 years in thermal power plant engineering, design, layout & project work. Degree required.

EXECUTIVE SALES ENGINEER

For Development of New Power Plant Business

10-15 years' experience in thermal power plant designing, development, economic studies & sales. Personal contact with people in this industry required. Degree desirable. Extensive travel, liberal per diem.

Rapidly-expanding world-wide engineering firm located on the West Coast offers Relocation Expenses & Oustanding Company Benefits. *Send resume to:*

P-3449, Engineering News-Record
Classified Adv. Div., P. O. Box 12, New York 36, N. Y.

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Field Engineers with refinery or related construction experience.

Office Engineers with heavy industrial construction experience on planning, estimating, costs, material takeoff, scheduling.

No Family Housing

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Manager of Employment & Placement
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BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

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Investigate this opportunity. Write today, giving age, education and experience. Your inquiry will be kept strictly confidential and will be answered promptly.

P-3067, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Engineering Agency

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ALL POSITIONS 100% FREE

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Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

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P-3223, Engineering News-Record
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Contract Disputes? Government construction contractors who have contract questions under dispute are offered my experience in the settlement or the appeal of said disputes. SS-2433, Engineering News-Record.

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1000 lengths—30' Ft. each
W-3494, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED
BACKHOE for LIMA 35 Ton Model 604
State condition; whether complete; location; photograph, if possible; and price.
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ROLLER 3-5 TON TANDEM
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ROLLER 10-TON, 3 WHEEL
ANDERSON EQUIPMENT COMPANY
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200 or 250 TON GUY DERRICK & 100 TON GIN POLE 175 Ft. Lg.
In replying state Model, Age Price and F.O.B. Point
W-3516, Engineering News-Record
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Three Buda Diesel Generators Model 8DCSG-1125, powered by Buda Lanova Diesel Engine, Generator Century Model ARC-586-W, 60 cycle, 3 phase, 125 kva, 220/127 volts, 328 amps, complete with switchboard equipment including synchronizing equipment. All in good condition. To be sold as a unit.

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20-25 Yard Tractor Drawn Scraper
with four 24:00 x 32, 24 ply tires
Excellent Condition
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General Motors, Cleveland Diesel Engine, 16 Cyl., Model 278A, rated 1440 HP at 720 RPM, Serial 9855.

ACCESSORY EQUIPMENT
Generator control panel, lube and fresh water coolers, filters, air intake silencer, carbon dioxide engine killing unit, pyrometer board, engine control board, day tanks, heat exchangers, alarm system, compressors, air storage tanks, centrifuge, exhaust silencer, 32 x 48 Butler steel building housing unit.

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Located at Greene, No. Dakota on trackage offered where is and as it, subject to prior sale.

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3½ yd. Dragline P&H, Model 1055 L.C., Serial #11370, Caterpillar Diesel Motor, model 375, Serial #16B170, magnet torque electric swings, 80' Boom includes 3½ yd. Dragline with essco Bucket, lite plant, recently overhauled at a cost of $15,000 in repairs, excellent condition. Available immediately, located upper New York state. F.O.B. Bedford, Ohio. Subject to prior sale. For further information call or write:

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PILE DRIVING EQUIPMENT

2—#1 Vulcan Hammers with standard base.
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1—McKiernan Terry Hammer 11B3
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All-steel pile leads to fit the above hammers, constructed with top, bottom, and intermediate sections for any length desired.
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CAPACITY 5 TO 20 TONS
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Used as Demonstrator for short time.
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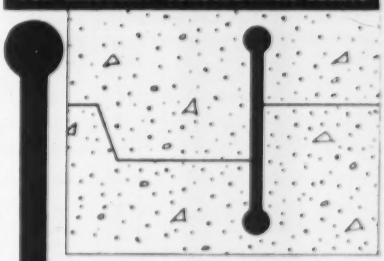

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More County Road Work

MOST INTEREST IN THE BIG ROAD PROGRAM inaugurated by the Highway Act of 1956 has been centered on the congested interstate network and other elements of the primary federal-aid system. There is thus a danger that too little thought is being given to the fact that the new program is going to place a greater load on the men charged with building and maintaining secondary roads. Part of this added load will be a result of the increase in federal aid for secondary road work, which was included in the 1956 act. But part also can be expected to be the result of the construction or reconstruction of highways designated as part of the 41,000-mile interstate network.

Standards set for the interstate system call for limited-access highways with practically all grade crossings eliminated. Inevitably, that will call for the relocation of many secondary roads intersecting the main highways, also for the construction of parallel roads where points of access to the rebuilt main roads are to be drastically cut in number.

And it appears probable that much of this induced construction on local roads will be in addition to work already on the local road program, which will mean a revision of many of those programs.

Fortunately, the county road organizations in many states are in much better shape to take on this extra load than they were a few years ago. Many are headed by engineers trained in highway engineering. Consequently, the planning for expanded programs can be done on a knowledgeable basis. Also, much more is known about types of construction adequate for secondary roads at a reasonable cost than was known only a few years ago. And research in that field is expanding. So, not only is more county road construction in prospect, but better county roads should be the result. The important requirement now is that the planning for these better county roads not be submerged in the welter of preparations for the interstate network program.

Help for the Draftsman

DRAFTING IS ONE FIELD of architectural and engineering endeavor that probably would more than repay the costs of studies aimed at improving economy, speed and quality of production. Any advances made in this direction not only will lower drafting costs but will also make possible more efficient use of technical personnel.

That an investigation of current practices is potentially profitable was indicated in a report in ENR Nov. 8, p. 136: American Machine & Foundry Co. made studies of its drafting practices and came up with several improvements. First, basic efficiency of draftsmen was improved by employing clerical help to do miscellaneous tasks for them. Next, drawings were simplified. As a result, AMF has been able to save 35% to 55% in drafting time.

While these techniques were developed for mechanical engineering drawings and may not be directly applicable to architectural and civil engineering drawings, they nevertheless are worthy of careful study. There is much to be gained if even a few of these should prove useful—or if they provoke other suggestions for saving time, money and labor.

Obviously, there is a danger of going too far with simplified drafting wherein office gains would be secured at the expense of field costs. In order that this may not occur, newly simplified drawings should be carefully tested to be sure that they do not make execution of field work more difficult nor be more liable to misinterpretation and mistakes than conventional drawings.

While individual firms can make the necessary investigations of drafting practices in their own drafting rooms, there is also much to be said in favor of a widespread study in which techniques used in different offices can be compared. Some useful standardization of practices might result. It is an idea that the professional societies could well consider.

Progress Against Pollution

THERE IS REASON FOR OPTIMISM in the battle to abate water pollution. Progress is being made. New evidence of this comes with the eighth annual report of the Ohio River Valley Water Sanitation Commission, the eight-state compact group formed in 1948 to tackle a seemingly insurmountable pollution problem in the industrial valley of the Ohio basin which extends from within New York State to Southern Illinois. Orsanco claims that whereas treatment works received sewage from but three out of every eight persons served by sewers in its valley in 1948, six out of eight is now the score.

These figures are a measure of progress not to be denied. They are figures to be praised, not buried midst other statistics (available and quite true) that can be cited to add to a very gloomy picture of what remains to be done in this field. Look rather at what has been done and is being done in construction of the facilities for abating pollution. The evidence is everywhere and is perhaps best summed up in ENR's figures showing more than 50% increase in sewage works construction volume this year over last. And this, without the newly authorized federal aid.

The point here is that success breeds success. There's a big job ahead to be sure, but it can be tackled from here on in with the self-assuredness that past performances supply. Pollution is being abated. There's no cause for complacency, but there is reason for an optimistic view of the job yet to be done.

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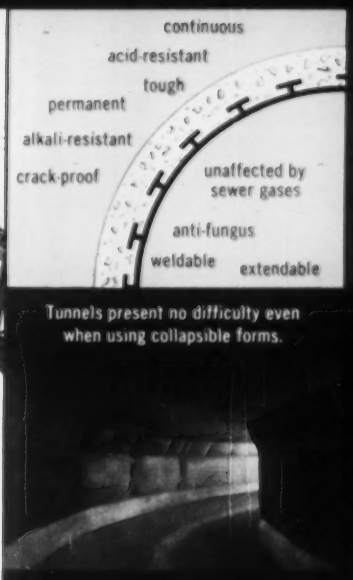

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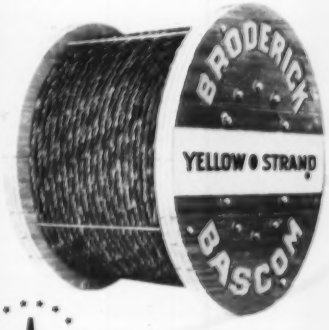

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